Novell's One Net strategy: Will users buy in? PAGE 54

Hot skills for a cold job market. PAGE 44

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TRAVEL FIRMS' IT PROJECTS FALTER

Industry scales back in wake of terror attacks

BY JENNIFER DISABATINO
MIAMI BEACH

The terrorist attacks of Sept. 11 did more than ground airline traffic for a few days. They also scuttled IT projects at companies throughout the travel industry.

"It came to a crunching halt," said Karen Brasher at the PhoCusWright Executive Conference here last week. Brasher, director of e-commerce at American Airlines Vacations, the packaged tour division of the Dallas-based airline, said her division was looking at a

THE BOTTOM LINE: IT projects vanished with the tourists.

Web redesign aod integrating information with the back-end system that links to hotels and other travel providers. Now that work has been put on hold.

John Marriott III, executive vice president of sales and marketing at Washington-based Marriott International Inc., said

Travel, page 77

COMDEX EXPECTS ATTENDANCE DIP

Number of exhibitors down as economy sags

BY CAROL SLIWA

Securing a hotel room in Las Vegas during Comdex week has traditionally amounted to an exercise in futility. But this year, vacancy signs are up and rates are down.

Comdex/Fall 2001 organizers at Los Angeles-based Key3Media Group Inc. said they expect attendance to fall from last year's 200,000 to 150,000 this year. They also expect the number of exhibitors to decline from 2,350 to 2,000 and the square footage of exhibitor space to slide from just over 1 million to 750,000.

Kim Myhre, president of Comdex Worldwide, part of Key3Media Group, attributed the 25% drop to the "economic state of the industry, not what happened on Sept. 11." He said he has seeo no major cancellations, and all major keynote speakers are ready to go.

"If the effect of a strong Comdex was to jump-start the IT industry, we'd all he very pleased," Myhre said, ooting

Comdex, page 14

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UCITA OPPOSITION TURNS UP HEAT

Foes of controversial software licensing law say vendor proposal still falls short

BY LEE COPELAND AND PATRICK THIBODEAU
WASHINGTON

Opponents of the vendor-backed UCITA software licensing law will meet here this week to seek major changes, including a prohibition of "self-help," a provision that lets a vendor shut down a oser's system remotely. UCITA's backers have signaled a willingness to delete this shut-off provison, but critics say that alone isn't enough.

UCITA is a model act sponsored by the National Coofer-ence of Commissioners on Uniform State Laws, which has urged all states to adopt it. Even if that body agrees to alterations, however, the impact of those changes remains in question. That's because UCITA has already been adopted by Maryland and Virginia, and companies say vendors are beginning to cite those states' laws in their software licensing contracts.

"We were doing business with one software company that fought more than usual to have Maryland law in the contract," said Dave Weidenfeld, senior counsel at fast-food giant McDonald's Corp. in Oak Brook, Ill. "We would not do the deal if Maryland law was used, and eventually they caved in."

Weidenfeld said McDonald's is adding warranties to its software contracts to ensure that it's covered against financial damages that may result from downtime should a vendor invoke the self-help measure.

Michael Gratz, intellectual property counsel at Milwaukee-based Boyle, Fredrickson, Newholm, Stein & Gratz SC, said the law makes it difficult for all but the largest companies to push back against unfavorable contract terms.

UCITA, page 77

Since the first message was sent in 1971, e-mail has transformed the way we do business — and the way many of us live. In our special report, we examine the impact that e-mail has had on the enterprise and look ahead to the new technologies that may drive more change.

Report begins on page 16.

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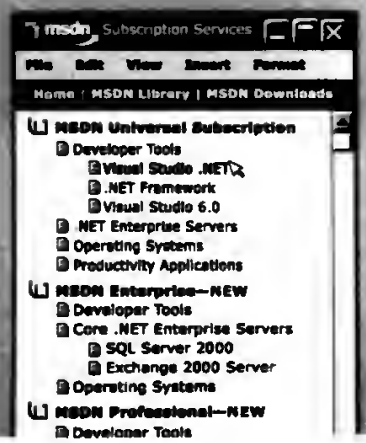

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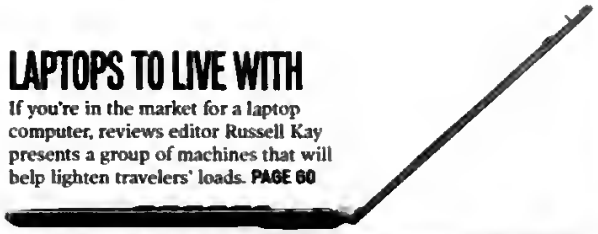
PLAYING THE BOARDS

Sitting on the board of a vendor company can provide CIOs with invaluable business experience, but beware the conflicts of interests that such positions can pose. **PAGE 32**

LAPTOPS TO LIVE WITH

If you're in the market for a laptop computer, reviews editor Russell Kay presents a group of machines that will help lighten travelers' loads. **PAGE 60**



NOVEMBER 12 2001

COMPUTERWORLD THIS WEEK

NEWS 6

6 Aetna, the nation's largest health insurer, pins its financial recovery on a tight bond between IT and the company's business units.

7 Nine states, including tech-centric California and Massachusetts, vow to keep fighting the antitrust battle against Microsoft.

8 IT plays a key role in tracking the disposal of anthrax-tainted materials.

10 Now that Lockheed Martin has won the largest defense contract in U.S. history, the responsibility for keeping the promises made in the bidding war falls on the IT systems that helped win the contract.

12 The government is awash in calls for money to be allocated for IT to safeguard critical infrastructure and homeland security.

Quick Link: For breaking news, updated daily at noon and 5 p.m., visit the *Computerworld.com* Web site.
www.computerworld.com/q?a4000

BUSINESS 31

31 Joe Auer says it's a great time to wrangle some price or support concessions from vendors whose books close Dec. 31.

38 ROI: Service-level agreements with telecommunications providers can be improved by getting vendors to agree to deliver specific skill sets and by meting out network performance metrics.

40 *Harvard Business Review* author Michael C. Jensen says corporate budgeting encourages managers to cheat, lowball targets and inflate results. That's why he advocates linear bonus plans.

48 Welch Allyn's new enterprise incentive management system is expected to help the company save $550,000 to $1 million per year by improving the way the medical supplies maker tracks and rewards its salespeople.

50 Workstyles: Take a look at what life is like for IT workers on the front lines of defense against bioterrorism.

TECHNOLOGY 53

53 Nicholas Petreley says Microsoft originated and perpetrated DLL hell, so why should we believe the company has devised a way for developers to get it out of Windows?

54 Novell has built its new strategy around an array of directory-enabled applications and services, but will it yield the e-commerce customers it's aimed at?

58 High-end Wintel hardware such as Unisys' ES7000 has caught the eye of companies looking to replace many small servers with larger multiprocessor machines.

62 QuickStudy: Reverse-engineering is the process of analyzing the functions of a piece of software or hardware and then translating them into a human-readable format. Find out more in our tutorial.

64 Security Journal: With security manager Vince Tuesday away, his team goes to work when it encounters suspicious port scans and connection attempts.

OPINIONS 28

28 Patricia Keefe says the government's settlement with Microsoft lets the IT industry and the public down by paving the way for business as usual in Redmond and by giving the company a fairly clear road to the Internet.

29 David Moschella writes that a critical part of the settlement will be the makeup and work of the three-person technical committee that will oversee the accord.

78 Frank Hayes says the details surrounding the Microsoft settlement constitute a sideshow. The company's real problem is that its whole business model is broken, and it needs new ideas.

28 Pimm Fox proposes that if you have Wintel and Linux servers, you can save time and money by placing more applications on them.

Editorial/Letters	28, 29
How to Contact CW	76
Company Index	76
Shark Tank	78

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ONLINE

YOUR THOUGHTS

As e-mail technology turns 30 years old, share your opinions and memories about the medium.
www.computerworld.com/q?a1220

E-MAIL'S IMPACT

Computerworld reporter Brian Sullivan talks to experts in business and academia about how e-mail has changed the way people communicate. Read more on the effect of "You've got mail."
www.computerworld.com/q?a24959

HOW HACKERS BREAK IN

Security professional Michael Casper outlines how hackers use their understanding of human nature to break into a company's systems — and what you can do to stop these threats.
www.computerworld.com/security

INNOVATOR OR PREDATOR?

Microsoft argues that integrating new features such as MediaPlayer into its operating system is innovation. That's untrue — and it should be illegal, says community member Martin Goetz.
www.computerworld.com/community/os

AT DEADLINE

Cambridge Univ. May Sue Oracle, KPMG

The University of Cambridge in England is considering possible legal action against Oracle Corp. and KPMG Consulting Inc. for a faulty computer system that the university estimates it spent $13 million installing with the aid of the two companies. The university said it spent five years and more than twice as much money as it had budgeted on the computerized financial system.

Feds Get Failing Cybersecurity Grade

The House Subcommittee on Government Efficiency, Financial Management and Intergovernmental Relations on Friday issued a failing grade to federal agencies for their cybersecurity efforts. "No responsible parent would stand for this kind of performance," said Harris N. Miller, president of the Arlington, Va.-based Information Technology Association of America.

Unilever Signs Data Integration Pact

Acta Technology Inc. in Mountain View, Calif., will announce Wednesday that its data integration software will be deployed by London-based Unilever PLC throughout the consumer products giant's worldwide organization. The multimillion-dollar contract will be spread over the next two years.

Yahoo Cleared in Suit

A U.S. District Court judge dismissed a case against Yahoo Inc. by French organizations that sought to penalize the company for allowing Nazi-oriented auction items and Internet links on its U.S. Web portal. Sunnyvale, Calif.-based Yahoo can't be forced to comply with French laws against the expression of pro-Nazi and anti-Semitic views, because doing so would violate its free-expression rights, the judge said.

Aetna Pins Recovery On IT/Business Union

CIO's plan will create six service units

BY LUCAS MEARIAN

OVER THE PAST few years, Aetna Inc. has been struggling with a backlog of claims created by slow processing systems, in addition to trying to centralize data on the millions of customers it has garnered from a flurry of acquisitions. It has also been trying to recover from three straight quarters of financial losses.

Executives for the nation's largest health insurer acknowledge that the company bit off more than it could chew in buying three other insurers since 1996. Now senior management is banking much of its financial recovery on its new CIO, Wei-Tih Cheng, and his plan to wed the company's IT department with other business units and train business managers to be overseers of technology projects.

"Historically, IT as a profession has not succeeded in educating business leaders on what IT discipline is about. So IT investments, by and large, have not been optimized," Cheng said.

AETNA CIO Wei-Tih Cheng: IT investments haven't been optimized.

Aetna could use some optimizing. Last week, the Hartford, Conn.-based health insurer reported its third consecutive quarterly operating loss, posting a $54.4 million shortfall. It blamed the most recent loss on high medical costs, saying the benefits of strategic and operational changes currently under way at the company won't be evident until next year or 2003.

Greg Crawford, head of health care research at Fox-Pitt, Kelton Inc., an investment bank in New York, said Aetna's problems stem from its inability to identify cost trends.

"Ideally, the information systems should tell all of the managers what's going on in the business in a real-time way," Crawford said. "Companies need to know exactly where their cost trends are in the middle of 2000 in order to be able to price properly in 2001. That means the business data needs to be accurate and timely. There's [been] a question on both counts with Aetna in the past."

Cheng, who took over as CIO in April after serving as IT director at the Memorial Sloan-Kettering Cancer Center in New York, has constructed a six-month plan that will spawn six new service units within Aetna aimed at dedicating specific resources to business operations. Those units will be responsible for areas such as strategic IT planning; application development; and technology and architecture services, which will conduct research on emerging technologies.

"I think for us that solution delivery is my focus," Cheng said. "If the roles and responsibilities and the road maps are not clear, then you kind of fumble a lot. You kind of step on each other's toes, and we cannot afford that."

Paper Chase

According to Gail Boudreaux, Aetna's head of claims and customer service operations, in the past, the 20,000 employees in her group often encountered inefficiencies when processing claims because many of the operations were paper-based.

For example, when a physician submitted a claim for payment, if he inadvertently used the wrong code, it would have to be resubmitted, resulting in multiple mailings or faxes. In other instances, physicians sometimes submitted two of the same requests by mistake, which led Aetna to erroneously pay out millions of dollars in claims. The more that Aetna can standardize and automate its 800,000 daily medical claims, the easier, faster and more accurately they can be processed, said Boudreaux.

Since creating joint IT/business teams, autoadjudication — the automated electronic processing of requests for payment from doctors for simple office visits or checkups — has increased by almost 30%, from 40.1% in April 2000 to almost 70% today, according to Boudreaux.

Through autoadjudication, simple claims don't have to be double-checked by agents and are processed by computer systems within 48 hours, compared with the normal 16-day manual turnaround cycle. The goal is to get about 75% of all claims autoadjudicated.

Crawford said Cheng's IT strategy seems to be taking Aetna in the right direction, but it's a path the company should have been headed in several years ago.

Performing the Consolidation Dance

Along with reorganizing Aetna's IT infrastructure, the company's CIO, Wei-Tih Cheng, is faced with finishing the consolidation of legacy systems from three big acquisitions.

Between 1996 and 1999, Aetna spent more than $11 billion to purchase U.S. Healthcare Inc., NYLCare Health Plans and Prudential HealthCare. This year alone, Aetna has switched 3.5 million dental customers from the Prudential buyout over to its centralized database system; the insurer expects to transfer 4 million more customers next year.

"By the time you build the perfect system, things have changed. And, given the sense of urgency . . . we need to migrate off those old systems as soon as possible," Cheng said. "It's not a technical migration, where you can just dump the records into your hosting database and that's it. It has to do with the business operations."

Cheng says that Aetna has the largest member database in the country and that senior management has made it clear that it wants to move to a more "fact-based, data-based, decision-making culture," as opposed to relying on anecdotal information to make strategic decisions, as it has done in the past.

"The challenges are that the systems are huge and they are not easily modifiable because some of them . . . have a long history," Cheng said. "We need to improve time to market, the quality of changes and new systems we develop, and do it cost effectively."

In order to accomplish that, Cheng plans to develop an enterprisewide information strategy that will focus on processes as opposed to the technology itself. Part of that strategy includes a capability and maturity model, which describes the principles and practices needed to certify software development.

Level 1 deals with how to manage a software project; Level 2 focuses on repeatable processes; Level 3 is defining the process; Level 4 revolves around management processes; and Level 5 is key or optimal practices.

"Our goal is to reach Level 3 in three and a half years," Cheng said. "This will bring consistency in the way we develop software, and this also will leverage the [business system and management model] resources so that both business customers and IT professionals will follow the same methodology."

~Lucas Mearian

States, Users Still Worried About Microsoft

Fear settlement with DOJ is too lenient

BY PATRICK THIBODEAU
WASHINGTON

California, home to Microsoft Corp.'s most ardent business rivals, has emerged as the leader among the nine states that rejected the federal government's settlement of its antitrust case against the software giant. It's a leadership position Kevin Dempsey, CIO at Reliance Steel & Aluminum Co. in Los Angeles, says he can understand.

"California is definitely poised to take a more aggressive stance," said Dempsey, who also said he believes that California is interested in protecting its technology firms. "The state has always been a leader in technology, so I think they have a great stake."

The dissenting states aren't alone in their concern.

The Case Splits in Two

Nine states have opted to join the U.S. government's settlement with Microsoft, while nine others are continuing litigation. As a result, this case, in the words of U.S. District Court Judge Colleen Kollar-Kotelly, will proceed down "two tracks."

TRACK ONE

Once the proposed settlement is published in the Federal Register later this month, the public has 60 days to comment on it, after which the government has 30 days to respond. The judge must then decide whether the settlement is in the public interest.

TRACK TWO

The nine states pursuing the case have a constitutional right to do so. The judge is planning remedy hearings, with courtroom testimony beginning in March. The dissenting states will begin a new discovery process, seeking documents from Microsoft. By Dec. 7, these states must submit their proposed remedy.

The settlement between Microsoft and the U.S. Department of Justice (DOJ), which is aimed primarily at helping PC makers and some rival software vendors, is expected to have little effect on corporate end users, who are becoming as worried about Microsoft's increasing market power as some vendors are.

While some corporate IT managers may praise Microsoft for bringing standardization to a networked world, they're also concerned about its ability to change enterprise licensing terms with little apparent fear of competitors.

"We feel more uncomfortable with the power that Microsoft is wielding as time goes by," said Dempsey.

Amy S. Courter, director of IT at Valassis Communications Inc. in Livonia, Mich., agreed. "They are definitely operating from a position of strength," she said.

Broader Issues

Microsoft's market power has been untouched by the five-year consent decree reached last week with the DOJ and nine of the 18 states involved in the case, say the company's critics, many industry analysts and the states continuing the litigation. The settlement largely addresses issues related to PC operating systems, such as licensing terms with PC makers and desktop configurations. But it doesn't address technologies such as Web services and intelligent devices that analysts believe will supplant the PC in the years ahead.

"The personal computer that is the focus of this suit isn't the center of the universe anymore," said Dwight Davis, an analyst at Summit Strategies Inc. in Boston.

The decision by technology-centric states such as California, Massachusetts and Utah to continue the lawsuit means the ultimate scope of the remedy is yet to be resolved. The DOJ settlement is now seen as a baseline from which U.S. District Court Judge Colleen Kollar-Kotelly could add tougher restrictions, if she can be convinced that they're needed.

Corporate IT managers are mixed on the merits of the DOJ's settlement.

Lisa Bender, IT manager at Falcon Plastics Inc., a Brookings, S.D.-based manufacturing firm, said she doesn't believe the settlement will foster innovation on the scale she would like to see. "I think we're going to be regimented to incremental steps instead of giant leaps," she said.

But Edward Flynn, CIO at chemical maker FMC Corp. in Philadelphia, said there's a big-picture reason for the government to settle: the economy.

"Lack of spending in the economy as a whole is due to uncertainty," and the Microsoft case is part of that uncertainty, said Flynn.

Insurer Sues, Claims KPMG Mismanaged Billing Project

Charges firm with fraud, malpractice

BY LUCAS MEARIAN

Health insurer Highmark Inc. is suing KPMG Consulting Inc. for what is likely to be tens of millions of dollars over what it claims was the consultancy's failure to create a critical electronic billing and accounts-receivable system. Highmark said KPMG abandoned the two-year, $15 million project this summer after it missed deadlines and created cost overruns through mistakes.

The $5 billion insurance company brought six charges against McLean, Va.-based KPMG Consulting, including malpractice, fraud and breach of contract. In its complaint, filed Nov. 2 in U.S. District Court in Alexandria, Va., Highmark said KPMG Consulting ran behind schedule by more than a year and attempted to charge the insurer an additional $8 million to complete the first phase of the project.

"We're still calculating what we're going to need should we move forward on the project," said Highmark spokesman Bill Miller. "What we're telling people at this point is that Highmark is alleging it suffered tens of millions [in losses] as a result of this." The amount of damages being sought wasn't specified in the lawsuit.

Pittsburgh-based Highmark claims that KPMG completed less than 20% of the project and that it was done in an unsatisfactory manner, "despite receiving $12 million." The insurer says KPMG then abandoned the project, leaving Highmark to complete it.

Assigning Blame

KPMG responded to the charges last week by placing at least half the blame on Highmark.

"Most of our engagements are collaborative between us and our clients. Each of us bears an equal responsibility to help the project succeed or fail," said KPMG spokesman John Schneidawind. "If either party fails to deliver, it can break down.

"We've been able to deliver on our part of the project, but through much of the engagement, Highmark hasn't done its part to ensure a successful implementation of the payment system on time and on budget," Schneidawind said.

Highmark chose KPMG for the project in May 1999. The four-stage project, known as HighBAR, was supposed to be completed in the first quarter of next year but never went beyond the second stage.

Highmark said KPMG informed it in April for the first time that it would need another $8 million to complete the first stage of the project.

Highmark refused to pay the additional fees, and KPMG stopped work on the project in mid-June. That was the most "disruptive point" at which KPMG could have chosen to stop, because Highmark was attempting to move into the "production portion of the system [KPMG] allegedly completed," according to Highmark.

Schneidawind last week said that because KPMG had only received the complaint a day earlier, it wouldn't be able to elaborate on its position. However, "lawsuits are a part of doing business," he said. "We still hope to rectify the problem and stand ready to work with them if they want us to."

The Allegations

Highmark is claiming that KPMG has cost it tens of millions of dollars by failing to complete an IT project. The charges are as follows:

Malpractice: KPMG "negligently, recklessly and/or intentionally failed to exercise the ordinary skill and knowledge possessed by professional computer consultants."

Fraud: KPMG's representations were knowingly false because it knew it didn't have any significant experience with object-oriented analysis and design.

Negligent misrepresentation: KPMG should have known its representations were incorrect and that Highmark would rely on them.

Breach of contract: KPMG failed to fulfill its promise to Highmark.

Credit Card Rivals Seek Mobile Payment Standards

Analysts view formation of consortium as a move to trump mobile carriers

BY BOB BREWIN

FOUR OF THE WORLD'S largest credit card firms have formed a consortium to jointly develop secure mobile payment standards that they believe will help make mobile commerce a reality within two years.

Analysts viewed the formation of the Mobile Payments Forum as the latest gambit in a high-stakes battle between credit card companies and mobile carriers for control of the m-commerce marketplace and cell phone customers.

New York-based American Express Co., MasterCard International Inc., Visa International Inc. and Tokyo-based JCB Co. last week decided to join forces to develop a cohesive approach to issues such as security and customer authentication, rather than waiting for results from the "fragmented" efforts by the card issuers and mobile carriers during the past two years, said Joe Chouinard, vice president of new e-commerce channels at Foster City, Calif.-based Visa.

Building Blocks

Based in Wakefield, Mass., the Mobile Payments Forum plans to develop standard deliverables to serve as building blocks for security and cardholder verification for use by banks, phone manufacturers and mobile carriers, said Simon Pugh, vice president of infrastructure and standards at MasterCard in Purchase, N.Y.

The standards could lead to the development of a system that lets people use mobile phones to make purchases at stores, with authorization and payment data flowing securely through the cellular phone network to wired networks operated by the forum partners and then to member banks.

Pugh said the forum intends to invite mobile communications carriers around the world to join, but he declined to say whether any had signed on yet.

Ritch Blasi, a spokesman for Redmond, Wash.-based AT&T Wireless Services Inc., said it still needs to be determined whether banks and card companies or carriers will be in charge of payments. Cellular carriers such as AT&T Wireless operate sophisticated billing and customer relationship management systems that can be configured to handle mobile payments, Blasi said.

Cellular carriers also have a financial incentive to retain control of m-commerce, he said. "Some card companies get 6% of every transaction. What if we could get a quarter-percent of that?"

Avivah Litan, an analyst at Stamford, Conn.-based Gartner Inc., said she believes the credit card rivals want to present a united front against cell carriers, which want to control the mobile payment process.

One of the major mobile carriers in Europe is interested in developing its own payment system, she said, adding that a number of carriers are considering developing their own systems for micropayments of $100 or less, with big-ticket purchases handed off to the card companies.

Litan said the Mobile Payments Forum faces a more basic problem than developing standards: poor market penetration. Despite hype about m-commerce during the past two years, there are only about 200,000 m-commerce users out of the 123 million U.S. cell phone customers.

Pugh agreed that Europe — which uses a single cell phone standard and where carriers have been able to sell services beyond voice service — offers a better opportunity for m-commerce than the U.S. Since European phones already use built-in smart cards to authenticate access to networks, Pugh and Chouinard agreed it would be easier and quicker to add payment service in Europe.

They emphasized that standards developed by the forum would allow carriers and banks flexibility in choosing security and authentication services, with a key goal being the need to work on existing phones. ▶

IT Helps Waste Hauler Handle Anthrax Safely

Clean Harbors will track NBC's debris via satellite

BY BOB BREWIN

When Clean Harbors Inc. begins hauling away potentially anthrax-tainted debris from NBC's offices in New York, operations managers will track the movement of the trucks in real time on a wide-screen map in a control room at the company's headquarters in Braintree, Mass.

Because the movement of any hazardous waste requires documentation for both the U.S. Environmental Protection Agency and the Department of Transportation (DOT), a Clean Harbors employee in New York will scan the paper files associated with the shipment and transmit them as Tag Image File Format files for storage in Clean Harbors' networked computer system. The system runs on dual eight-processor servers from Compaq Computer Corp.

David Proud, vice president of e-commerce at Clean Harbors, said the satellite tracking system and the electronic storage of hazardous waste shipping documents are just two examples of how the 21-year-old environmental services company has harnessed IT to manage the gritty business of hazardous waste disposal and environmental remediation.

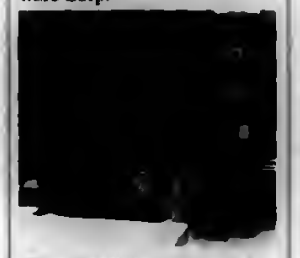
This includes work at the World Trade Center site in New York, where the company, since Sept. 11, has had hazardous waste cleanup crews and a mobile command center with high-speed Digital Subscriber Line connections for onboard computers and scanners.

Online Access

The Clean Harbors computer network has 1.7TB of storage capacity, according to Joe McNally, the company's vice president of MIS. The system provides online access to everything from information about hazardous material — with the anthrax section substantially beefed up in the past two months — to shipping documents available to Clean Harbors customers through a password-protected Web site.

The firm's patented Choice e-commerce system also lets Clean Harbors customers such as those in the oil and chemical industries fill out DOT documents online and obtain quotes for the transportation of waste material. Clean Harbors has 650 trucks and a dozen sites for hazardous waste disposal.

The company's customer relationship management system is from Bellevue, Wash.-based Onyx Software Corp., Proud said. Onyx uses a financial system from Pleasanton, Calif.-based PeopleSoft Inc. and an in-house waste information network. Data integration is handled by software from Bedford, N.H.-based Scribe Software Corp.



TECHNICIANS AT WORK in Clean Harbors' control room.

Proud said Clean Harbors developed the tools to better manage the complex, government-mandated paper trail needed for dealing with hazardous materials.

"This is a highly regulated industry," Proud said, noting that moving the paperwork online saves customers both time and money.

High-Tech Tracking

Clean Harbors has so far coordinated the anthrax emergency response and disposal effort by phone, Proud said. But when its trucks start to transport material — such as office furnishings and floor coverings from the NBC offices — information systems will play a big role in following the trucks' movement. Clean Harbors uses an OmniTracs satellite tracking system operated by San Diego-based Qualcomm Inc.

Disposal sites in the U.S. that can handle anthrax are backlogged, so it's not clear when Clean Harbors' trucks will roll. But when they do, the company will be able to electronically track any deviation from the preplanned route. Drivers can send either an automatic alarm or an e-mail through an onboard computer. ▶

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BRIEFS

Staples Names CIO

Framingham, Mass.-based Staples Inc. has hired as its new CIO the man who helped create a competitor's e-commerce site. Paul J. Gaffney, a vice president at Schwab Technology, an affiliate of San Francisco-based Charles Schwab & Co., was one of the creators of Delray Beach, Fla.-based Office Depot Inc.'s e-commerce operation. Gaffney will start at Staples Jan. 7.

War Halves Pakistani Software Orders

Pakistan's fledgling software industry is feeling the heat from the war in neighboring Afghanistan, as foreign customers cancel orders based on what industry officials have called a mistaken belief that violence is spilling over the border. Foreign business is down more than 50% since the Sept. 11 terrorist attacks on the U.S., said Syed Hamza Malik, president of the Pakistan Software Houses Association. Since then, employers have sent home about 10% of the approximately 3,000 software engineers working on foreign projects, he said.

H-1B Visa Record Set

Despite the weak economy, the Immigration and Naturalization Service last week said it approved 163,200 petitions for H-1B visas during the fiscal year ended Sept. 30. That's a record, but it's short of the 195,000 cap set by Congress. The INS could have approved more visas but closed the year with 28,000 pending applications. These will be counted against the current fiscal year's cap, which is the same as last year's.

FCC OKs Spectrum

The Federal Communications Commission last week voted to increase the amount of radio spectrum that wireless carriers can use in urban areas. The vote means that wireless carriers can now operate in the 55-MHz band in urban areas, up from the previous cap of 45 MHz. Rural areas already have a limit of 55 MHz.

Fighter Jet Contract a Proving Ground for IT

Design, production present key challenges

BY DAN VERTON

LOCKHEED MARTIN's capture of the Pentagon's $200 billion Joint Strike Fighter (JSF) contract may be the most complex and demanding test of product data management software in the defense and aerospace industry, experts and analysts said.

In winning the largest defense contract in history on Nov. 2, Bethesda, Md.-based Lockheed Martin Corp., which is partnering with Los Angeles-based Northrop Grumman Corp. and U.K.-based BAE Systems, defeated the team led by Chicago-based The Boeing Co. And although IT played a critical role in Lockheed's ability to produce a winning concept for the advanced jet fighter, the upcoming design and production phases will be the real test of how well Lockheed's software team performs, said experts.

"When you firm up a design, that's when you firm up your costs and the manufacturer's process capability and ability to produce," said Mike Burkett, an analyst at AMR Research Inc. in Boston. It's in the design phase that "you find out if your concept actually works," he said.

The Pentagon will scrutinize Lockheed's performance during the upcoming design phase and as production of the estimated 3,000 jets ramps up in 2009, said Burkett. The rollout, which will include the U.K. and other U.S. allies, will continue for 25 years.

Schedule and cost control, which are highly dependent on the use of collaboration software, will be critical to Lockheed keeping the contract, Burkett noted. There's also a remote chance that the company could drop the ball and lose the contract, he said.

Lockheed officials couldn't be reached for comment.

Responsibility for keeping the program on track rests on the software that helped Lockheed snag the contract in the first place. Metaphase from Structural Dynamics Research Corp. (SDRC) in Milford, Ohio, could eventually support up to 50,000 users in 30 countries once the JSF program hits full speed, said Tim Nichols, manager of Aerospace & Defense Industry Marketing at SDRC, now a part of Electronic Data Systems Corp. in Plano, Texas.

THE $200 BILLION CONCEPT: Lockheed's X-35 Joint Strike Fighter.

"When it goes full course, it's going to be the most complex virtual enterprise ever conceived," said Nichols. "These aircraft change every five years as technology changes. So tracking changes and reuse is absolutely critical."

Everybody — from the design team to suppliers — needs to have access to the most recent data, 3-D models and drawings, said Erica Rugullies, an analyst at Giga Information Group Inc. in Cambridge, Mass. "Without a PDM (product data management) tool, they would be printing out a paper copy of a 3-D drawing, and a trading partner would be forced to re-create it," said Rugullies.

The Lockheed and Boeing JSF development teams both used Windchill Web-based portal software from Needham, Mass.-based Parametric Technology Corp. to integrate multiple PDM, enterprise resource planning and database systems during the initial concept phase of the contract, which included the production of three prototype aircraft from each team.

The design phase ahead will be one of the biggest challenges Parametric's software has ever encountered and will undoubtedly become a model for other industries, said Mike Brown, senior vice president of sales for aerospace and defense at Parametric.

"Whether it's the aerospace, high-tech or automotive industry, you really have the same kind of business issues that you're grappling with," he said.

What's Next on Boeing's Agenda?

Despite its loss of the multibillion-dollar JSF contract to Lockheed Martin, Boeing may still receive some critical IT-related work from the program as well as new revenue from efforts to boost commercial airline security, said analysts.

Although there's still talk on Capitol Hill about forcing a split of the $200 billion JSF contract, analysts said Boeing's superior reputation for process and cost management will likely result in substantial subcontract work on the JSF program. In addition, the company is looking to extend some of its commercial airline IT programs, such as its broadband Connexion service, to the burgeoning security arena in the aftermath of the Sept. 11 terrorist attacks, analysts and company officials said.

Speaking last week at the Goldman Sachs Global Capital Goods Conference in New York, Boeing Chief Financial Officer Michael Sears said additional business segments for the company will include an expansion of Connexion service to the government sector and an increased focus on global air traffic management.

Connexion, a broadband satellite connection service initially designed to bring Internet access and video to passengers, could also be used to send real-time images from aircraft to ground stations, said Mike Burkett, an analyst at AMR Research. Although it's still in development, Connexion could potentially open up the security services business to Boeing, he said.

Since 60% of Boeing's business is in the commercial sector, its increased focus on global air traffic management makes sense, said Burkett. Boeing is trying to leverage its IT programs to take over supply chain management for airlines as well as for other vendors, he said. Recent initiatives include Boeing's Global Airline Inventory Network for online supply ordering.

In the end, Boeing will be able to absorb the loss of the JSF contract much better than Lockheed would have, according to a Nov. 2 report by Michel Mariuzeau, an analyst at San Antonio-based Frost & Sullivan Inc. Boeing "is a more diversified and cash-rich company," he noted.

– *Dan Verton*

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Lieberman Proposes $1B IT Security Fund

Targets most-pressing cybersecurity issues

BY DAN VERTON
WASHINGTON

JOSEPH LIEBERMAN (D.-Conn.), chairman of the Senate Governmental Affairs Committee, has called for the creation of a $1 billion IT fund that would enhance homeland and information security while providing a much-needed boost to the sagging economy.

The Connecticut Democrat's proposal would set up a fund that would be managed by the White House Office of Management and Budget and would be similar to one that was set up to help the government respond to the Y2k crisis. However, the money would be aimed specifically at jump-starting some of the more pressing IT security requirements throughout the government and the private sector.

The proposal has attracted the support of Sen. Robert Byrd (D-W.Va.), who is expected to include it as part of his economic stimulus proposal to help the nation recover from the setbacks caused by the Sept. 11 terrorist attacks.

Word of Lieberman's plan comes on the heels of a call from Harris Miller, president of the Arlington, Va.-based Information Technology Association of America, for Congress to put some real money on the table for IT security improvements. While Lieberman's $1 billion plan falls far short of the $10 billion Miller said is needed to effect real change, Miller said Lieberman is definitely on the right track.

"We would encourage him to increase the amount and to focus exclusively on government cybersecurity," Miller said. "The reason he needs to focus on cybersecurity is that many other funding sources are being brought forward to address his other legitimate areas of concern, such as aviation security and health care. But as far as we can tell, his initiative is the only one specifically focusing on government cybersecurity funding."

SEN. LIEBERMAN says fund would boost IT defenses and the economy.

According to talking points being used to sell the Lieberman proposal, the money in the fund could be spent only on projects to improve the federal government's information security systems, protect critical infrastructure or provide stronger defenses against natural and man-made threats to the nation.

Alan Paller, director of the SANS Institute in Bethesda, Md., expressed a lack of optimism about how the proposed funding would be used. "My concern would be the skill with which Washington consultants and IT vendors in particular might package every pet project as 'security-enhancing,'" Paller said. "If there were a tough, rational culling process ... I'd be a fan."

Cybersecurity Czar Pushes For More Spending on IT Protection

BY MARYFRAN JOHNSON AND DEBORAH RADCLIFF
PALO ALTO, CALIF.

U.S. cybersecurity czar Richard Clarke, warning that cyberattacks on the nation's critical IT infrastructure could potentially cause "catastrophic damage to the economy," last week urged more spending on IT infrastructure and security.

Clarke, chairman of the president's Critical Infrastructure Protection Board, also told a gathering here of about 150 security and privacy experts from business and government that he opposes a national identification card and wants to reduce the opportunities for anonymity on the Internet.

Although the Bush administration has taken no formal position on national ID cards, Clarke said most officials "feel it's not a smart idea" to push for a single card. What he'd like to see instead, he added, is broader use of strong authentication technologies for IDs such as drivers' licenses.

Speaking at the Trusted Computing Conference, hosted by Microsoft Corp., Clarke also strongly defended the proposed GovNet project, which would build a closed-loop government network that would be isolated from the Internet.

"We are not abandoning the Internet," he said, adding that he envisions a GovNet system in which workers would have more than one PC on their desktops — one on a system open to the Internet and the other on a closed-off and highly classified network. Clarke stressed that if the GovNet proposal turns out to be a vast expense, it won't be pursued, and he urged the audience to get involved in the request-for-information process under way this month. GovNet is "not intended to be a silver bullet," he added, "but just one piece of the overall solution."

CLARKE: "Freedom isn't free, and security isn't free, either."

In his first speech since the Sept. 11 terrorist attacks, Clarke said spending on IT security and infrastructure protection has to increase in both the private and public sectors. "Freedom isn't free, and security isn't free, either," he said, adding that unlike six weeks ago, "no one is saying we shouldn't pay more for security now."

IT security is just as important as the broader collection of homeland security initiatives, Clarke said, urging private industry to play a prominent role in helping the government craft its plan for online security.

"What do you want in the plan? How should we structure it?" he asked.

But several attendees said they found Clarke's call to action a little too vague in terms of how the private sector could coordinate its security- and privacy-related IT efforts with those of the government.

"Market forces are not necessarily going to protect the infrastructure," observed one attendee from a large West Coast financial institution, who asked not to be named. "I'm suggesting that counter to regulation, or even coinciding with regulation, that the government offer incentives for us to be good citizens, like tax cuts for those who conduct assessments and develop recovery procedures."

Where the Money Would Go

Sen. Lieberman's proposal covers funding in the following key areas:

- **Air travel:** Part of the money could fund an "early-warning detection system" for the aviation industry that would identify suspected terrorists if they tried to book flights. The system would include a secure intranet accessible to law enforcement agencies. It also would fund the use of biometrics-enabled smart cards to confirm the identities of passengers and cross-check fingerprints or facial patterns against terrorist watch lists. Funds could also pay for additional bulk-explosives scanners and other baggage-scanning equipment for airports.
- **Bioterrorism:** The money could also be used to kick-start a national biological detection system to provide early warning of biological terrorist attacks, according to the Lieberman proposal. Through enhancements to the nation's communications infrastructure, authorities could receive online training about how to respond to chemical, biological or other emergencies and tap into expert assistance through telemedicine.
- **Border control:** There's also talk on Capitol Hill about using the money to purchase automatic scanning equipment for passport photos that could be linked to a national database of passport and visa holders. The Lieberman proposal calls for developing a database to link universities and the Immigration and Naturalization Service to immediately detect student visa violations. The high-speed communications enhancements could also link all border patrol, immigration and customs networks and integrate data on illegal border crossings from remote monitoring equipment positioned in unpopulated border areas.
- **Transportation:** The transportation sector, which has become one of the focus areas for law enforcement agencies on alert for possible terrorist attacks, could also benefit from the new funding. IT could provide for better traffic management if evacuation from an urban area were necessary and could help authorities develop a tracking system to monitor the movement of hazardous materials around the country. In addition, IT tools could provide real-time tracking of U.S.-bound shipping containers to allow better detection of high-risk shipments before they enter U.S. ports.

– *Dan Verton*

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Wireless LAN Gear Offers Fivefold Increase in Speed

But big users such as FedEx don't plan to quickly shift from older, slower technology

BY BOB BREWIN

New wireless LAN products on display at this week's Comdex show will feature a quantum leap in throughput, from 11M to 54M bit/sec. Intel Corp. and Proxim Inc. will both showcase access points and PC cards that take advantage of the technology.

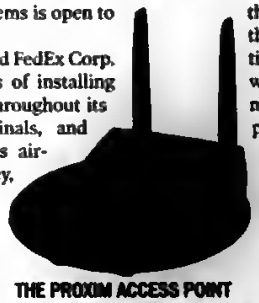
The new products, which operate under the IEEE 802.11a industry standard, branded as Wi-Fi5 by the Wireless Ethernet Compatibility Alliance (WECA), gain their speed advantage over the older 802.11b wireless LANs (Wi-Fi) by operating in a higher frequency band. Wi-Fi uses the unlicensed 2.4-GHz frequency band, while the newer Wi-Fi5 operates in the unlicensed 5-GHz band.

Wi-Fi5 gains speed at the expense of range, according to David Cohen, chairman of the San Jose-based WECA. Higher radio frequencies translate into shorter range, he said, estimating that Wi-Fi5 will cover only half the area covered by Wi-Fi wireless LANs.

But since the typical wireless LAN installation operates indoors, where coverage is measured in hundreds of feet, Cohen said, the shorter range of the new technology should-o't make much of a difference. If it does, he said, enterprises could install more access points — which Intel has priced at just under $700 — for the newer technology.

How rapidly users will move to the faster systems is open to question.

Memphis-based FedEx Corp. is in the process of installing wireless LANs throughout its hubs and terminals, and even onboard its aircraft. Ken Pasley, director of wireless development at FedEx, sees the 5-GHz band used by Wi-Fi5 as a migration path that will eventually help the company move away from the spectrum clutter he expects as more companies adopt the 2.4-GHz band.



THE PROXIM ACCESS POINT can achieve 54M bit throughput.

But for now, FedEx is comfortable with Wi-Fi, Pasley said, explaining that FedEx hasn't fielded any applications that tax the 11M bit/sec. throughput, and that includes relatively high-bandwidth aircraft maintenance applications.

United Parcel Service Inc. in Atlanta, which is in the process of installing what it claims is the world's largest wireless LAN infrastructure based on Wi-Fi, "is always looking at new technologies, and 802.11a is no exception," said spokeswoman Joan Schnorbus. "The bigger bandwidth and cleaner spectrum are appealing."

But, Schnorbus said, "there is no driving need for it right now. For the foreseeable future, we are using 802.11b."

Taizoon Doctor, general manager at Intel's mobile communications division, said he believes enterprises that routinely transmit bandwidth-hungry files such as computer-aided design applications will he attracted to the higher bandwidth of Wi-Fi5 because they already operate on 100M bit/sec. wired LANs.

Amy Martin, a spokeswoman for Sunnyvale, Calif.-based Proxim, said the bandwidth offered by Wi-Fi5 is needed to handle even ordinary office applications such as PowerPoint slides, the distribution of which "can bring an ordinary wireless network to a halt."

Continued from page 1

Comdex

that organizers are "doing everything we can to get back to business."

A random poll of 25 corporate IT managers showed that among the companies that typically send staffers to the Las Vegas Comdex event, most will continue to do so this year.

"Comdex is just too important a show," said Larry Kinder, executive vice president and CIO at New York-based Cendant Corp., whose holdings include car rental company Avis Group Holdings Inc., various hotel brands and Galileo International Inc.'s online reservations system. Kinder said his company won't cut back on its Comdex attendance.

Two companies even indicated that they will increase their presence at Comdex this year. Edward Flynn, CIO at chemical and machinery manufacturer FMC Corp. in Philadelphia, said his company will send two representatives, "which is higher than normal."

Susan McKay, vice president of customer and information systems at medical device manufacturer Aircast Inc. in Summit, N.J., said her company will make its first trip to Comdex. "Aircast is a small company, so three of us going to Comdex was a big decision for me," McKay said. "However, we don't want to get so busy that we forget about the future." McKay added that she's interested in seeing "how the leaders in technology are responding to the changes in the marketplace."

Some IT managers said their companies will send fewer IT staffers to Comdex, and several indicated that they're cutting back on travel in general.

"The economic slowdown has been a lot more severe than anybody thought it would have been since Sept. 11," said Wolly Morin, CIO at New York-based AnnTaylor Stores Corp. Morin said his company typically sends at least one staffer to Comdex, but it won't this year.

"Money is tight," said Patrick Wise, vice president of e-commerce at Landstar System Inc., a trucking company in Jacksonville, Fla. "You have to pick and choose what's important to attend." He added that his company won't send anyone to Comdex this year.

Randy Richardson, senior vice president of information services at The Talbots Inc., said the business climate has prompted the Hingham, Mass.-based retailer to scale back on all nonessential travel expenses. "I usually go to Comdex every two or three years, and we usually have a presence most every year," Richardson said. This year, Talbots won't.

Mostafa Mehrabani, CIO at TRW Inc., a $17 billion technology, manufacturing and services company in Cleveland, said his firm will send two to four staffers, about half the number it sent last year, largely due to the economic downturn. Their chief areas of interest will be collaboration tools, wireless technology and handheld devices, he said.

As attendees scope out cutting-edge products, they will find fewer of the newer vendors that have supported the dot-com industry. But large vendors that normally have a major presence at Comdex will continue to do so. Hewlett-Packard Co. spokeswoman Ann Finnie said her company negotiated its floor space and press room a year ago, as most companies do. "We're not cutting back at all," she said. "It's business as usual at Comdex."

Microsoft Corp. actually plans to increase the number of staffers and support personnel manning Comdex from 300 to 500, company spokesman Corey duBrowa said. "We really want to maximize our one-on-one time with customers at this event," he said, noting that Microsoft plans to focus on business software more than consumer products and games.

"This goes back to our research that shows that the attendees that go to Comdex represent businesses of many different sizes," duBrowa said.

Senior reporter Bob Brewin contributed to this story.

Comdex/Fall-off 2001

Comdex/Fall 2001 may see about 25% fewer visitors than 2000.

	LAST YEAR	THIS YEAR
Number of attendees	200,000	150,000
Number of exhibitors	2,350	2,000
Exhibition space	Over 1 million square feet	750,000 square feet

SOURCE: ESTIMATES PROVIDED BY COMDEX WORLDWIDE PRESIDENT RIM MYHRE

Quick Link Visit our special Comdex page. www.computerworld.com/q/fall200

E-Mail@30

Since its 1971 debut, Internet e-mail has had a profound impact on business and society. In this three-page report and on our Web site, we examine that impact and what's to come.

30 Years Of E-Mail Changes the Enterprise

BY RUSSELL KAY

BUSINESS HAS always been in a hurry, so companies are quick to adopt the fastest communications methods available. Electronic mail is now a vital component of daily operations. Marking the 30th anniversary of Internet e-mail, we have to ask: How did we ever do business without it?

"Both from a personal and a business standpoint, e-mail has revolutionized how we do business," said Brian Brylow, senior vice president at Robert W. Baird & Co. a financial services firm in Milwaukee.

"What used to take days or weeks is now delivered in 10 seconds anywhere around the globe," he continued, adding that "e-mail is much cheaper, delivering documents and attachments in seconds at no cost instead of using expensive overnight delivery services."

E-mail hasn't created the paperless office, but it has helped. "Certainly there are no more internal memos on paper," said Dan Black, director of e-commerce systems at United Networks, a wholly owned subsidiary of United Air Lines Inc. in Chicago. He said it has also changed the way we communicate. "It's actually deformalized the way we communicate. Formerly you'd take a lot of time to compose a letter, but now people write an e-mail [using incomplete] sentences. ... [It's] not necessarily better, but [it's] quicker for sure."

E-mail beats the telephone because it can connect people separated not only by space but also by time. E-mail encourages the fast turnaround of ideas and opinions, and it makes possible extended discussions between people who aren't in physical proximity. "For deferred interaction, e-mail is king," said Vinton Cerf, senior vice president of Internet architecture and technology at WorldCom Inc.

Add in wireless e-mail on handheld devices, said Brylow, and it's clear that "e-mail is now the personal communication medium that you can take anywhere."

But e-mail is neither as fleeting nor as private as might be suggested by the way most users dash off their messages. "We store every e-mail forever," said Black. "It's archived to tape automatically, whether the end user deletes it on the PC or not."

Thus, e-mail represents a vast and indiscriminate corporate memory, determinedly holding on to everything that passes through it.

In regulated industries like financial services, e-mail archiving is mandated. "The biggest problem," said Brylow, "is the need to keep a copy of everything." Besides archiving, he said, "this requires systems that let an end user create an acknowledgement or reply, then determine whether it is safe to distribute."

The Dark Side

Spam, that never-ending mass of unwanted electronic junk mail, has become a large enough problem that a whole industry has been developed to help organizations filter out and block such communications. Other productivity impediments include time-consuming personal e-mail and the way people copy and mass-forward jokes and images to everyone they know.

Also, e-mail's turnaround speed is a mixed blessing. Immediate responses can be intemperate. It's so easy to press the Send button, even accidentally, but generally impossible to call back a message once it's been sent.

M. Lewis Temares, vice president, CIO and dean of the school of engineering at the University of Miami in Florida, said that "in some ways, [e-mail] has impeded communication, because executives sometimes make arrangements and commitments and forget to tell or check with their administrators."

Just the sheer number of e-mail messages can be a problem. David Ferris, president of Ferris Research Inc., a San Francisco-based analyst firm specializing in communications and collaboration technologies, pointed out that "e-mail overload can get people out of control."

Why E-Mail Works Well

- **It's a push technology:** It comes to you.
- **It waits for you:** It's asynchronous.
- **It's one-to-many:** It lets you communicate with many people at once.
- **It's almost free:** Text-based communication is very inexpensive.

SOURCE: HTTP://LIVINGINTERNET.COM/E/EP.HTM

MORE THIS ISSUE
To read about the future of messaging, e-mail security challenges and more, **see pages 20 and 28.**

A History Lesson

Electronic messaging among users within a single computer time-sharing system at a university or a large company such as IBM has been around since the early 1960s. However, e-mail among computers, as we think of it today, came into being in 1971 when Ray Tomlinson at Bolt Beranek and Newman (now Genuity Inc. in Woburn, Mass.), became the first person to send a message from a computer on one network to a computer on another network.

It's not entirely accurate to say that Tomlinson created e-mail, because many other people were involved at the time and were working on the same problems. However, Tomlinson is the undisputed source for the way we write e-mail addresses. Limited by a caps-only printing terminal, Tomlinson decided on the now-ubiquitous @ symbol (shift 2) to separate the user name from the computer name and to indicate that the address was outside the local network.

"The @ sign seemed to make sense," Tomlinson later recalled. "I used the @ sign to indicate that the user was 'at' some other host, rather than being local."

– Russell Kay

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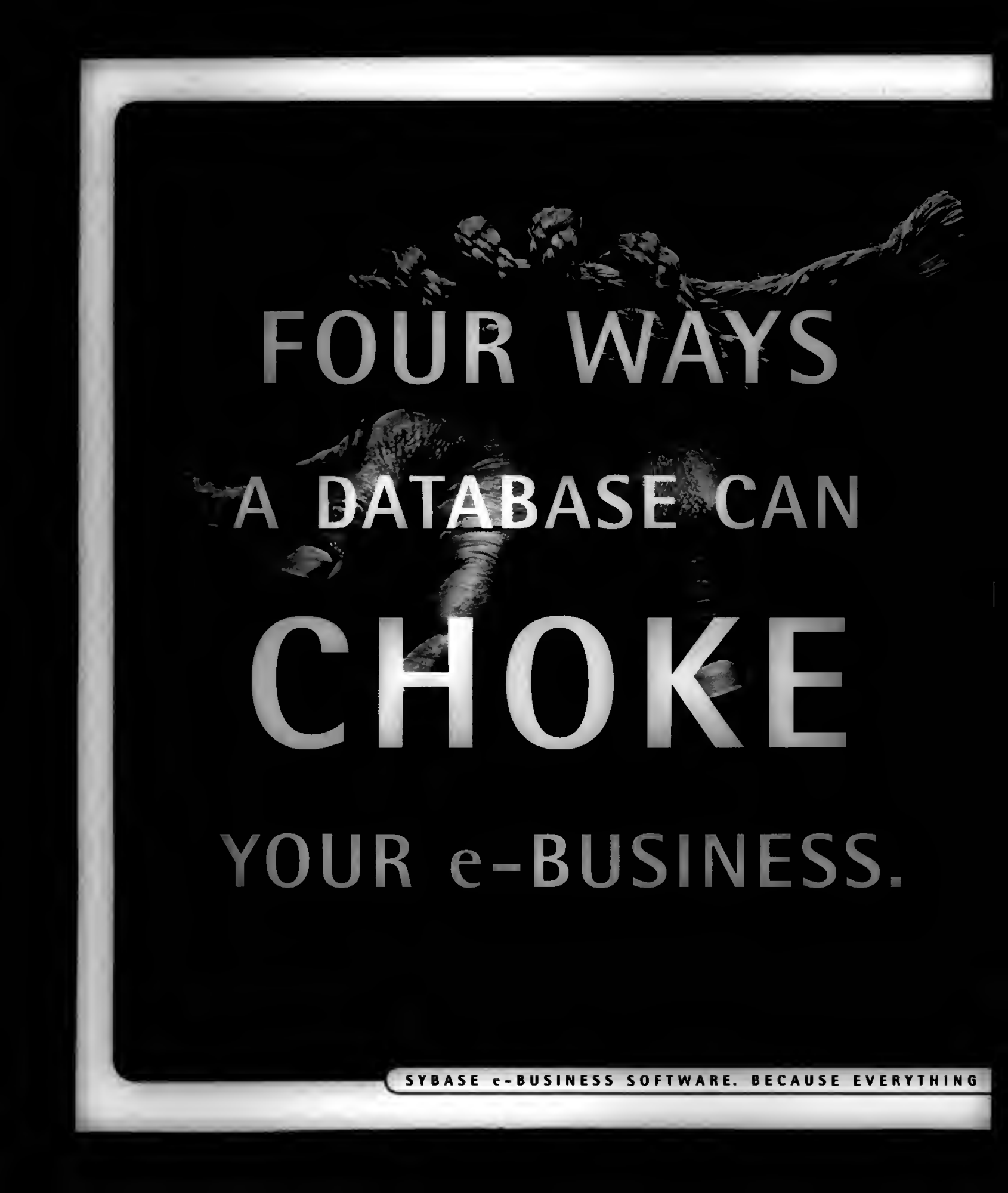
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The sad reality is an e-Business address is like a target painted on your back. The more data collected in your database server, the more paths of access to that server, the more tempting the target is to intruders.

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XML MEETS A DEAD-END.

This may seem too obvious to speak of, but still worth noting. Your database needs to play nicely with the many Web-driven technologies that make up today's e-Business language. Obviously this includes both Java and EJB.

But now more than ever it means XML, the emerging standard for encoding information for document interchange. If your database is not totally XML fluent, you're going to have a hard time doing B2B commerce on the Internet.

Sybase ASE makes XML rock in ways other databases simply don't. Sybase ASE has a complete XML framework for storing, managing and retrieving XML directly to and from the database.

Data stored in the database can be retrieved as XML allowing for easy integration of your existing information with your new Web applications.

A general XML-Query facility (XQL) allows you to easily query XML data whether it's stored in the DBMS, a flat file or even a URL. Bottom line: faster development times, faster access to the information you need.

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In a time when everyone is searching for new efficiencies, Sybase ASE delivers real value.

It reduces costs by the very nature of its 24x7 design. It ensures that your business never goes down. It delivers fast backup and recovery. It utilizes hardware resources efficiently. But even before you get to all of that it saves you time and money in the traditionally costly development process.

If e-Business is going to be a critical part of your success this year, ASE has a critical role to play.

To find out more about how Sybase ASE can help you quickly deploy and manage a successful e-Business, visit www.sybase.com/breathe or call 1-800-8-SYBASE. We'll make sure you get a database that won't choke your e-Business.

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What Lies Ahead for the Messaging Enterprise?

Real-time is the future, but so are storage headaches

BY CYNTHIA MORGAN

Few doubt that e-mail has transformed business during its 30-year history — and that transformation is continuing. New messaging technologies, and the problems they bring, will likely have an equally significant impact on the way businesses work in the future.

Over the next few years, messaging systems will embrace real-time operation in addition to the traditional store-and-forward model and will be woven into virtually every major application that businesses use. These systems will increasingly incorporate other forms of communication, such as mobile/wireless systems, telephony, fax, speech recognition and rich media. And messaging managers will face one of the most critical issues in IT today: how to capture, save and mine the rich information stores these systems accumulate over the years.

New types of messages will add to already-overloaded message storage systems, causing problems for IT managers, experts say.

"People are using their inboxes not only for messaging, but also for file storage," said Andre Cyr, senior systems administrator at Bowman Capital in San Mateo, Calif. "It's not unusual for our analysts to save 1GB, more than 100,000 messages, in a year."

Most companies "are still trying to solve the message storage problem by using bigger servers or limiting the size of employee mailboxes. Ultimately, this is a strategy that will fail," said Sara Radicati, CEO of The Radicati Group Inc., a consulting and research firm based in Palo Alto, Calif.

The Future

Messaging is evolving quickly on several fronts:

- Real-time collaboration
- Rich media (streaming audio and video)
- Unified messaging
- Speech recognition
- Integration into other platforms, such as wireless and telephony

This evolution will heighten already-critical problems in:

- Storage
- Security
- Administration

Existing messaging platforms can efficiently store and retrieve about a year's worth of messages. But an organization must generally handle five to seven years of business-critical messages. Products that can handle the archiving and fast search-and-retrieval of such massive stockpiles of information, including Enterprise Vault from KVS Inc. in New York, will grow rapidly in popularity, Radicati predicted.

"We're using the Vault archiving system to siphon off messages older than one year," said Cyr. "[A user] can ask for every e-mail that uses the ticker symbol MSFT in a given period and retrieve all those messages within 10 seconds instead of the 20 the 30 minutes it would take from Outlook."

Instant response is becoming increasingly important for big companies. "Real-time collaboration is the hot button for the future. It's being built into sales force automation tools, [customer relationship management and] accounting," said Robert Mahowald, an analyst at IDC in Framingham, Mass.

Instant messaging's enormous popularity has helped it make its way into organizations well before its formal acceptance by IT departments.

"Employees are building what's almost a parallel collaborative universe, one that right now, the IT department has very little control over. When they start downloading business documents and reaching business decisions through IM, they're sending that valuable information out of the enterprise," Mahowald warned. "IT managers are right to scream about it, but they need to take control."

FACT

of business Internet users check their work e-mail when they're on vacation.

SOURCE DATAQUEST INC. SAN JOSE

Hewitt Associates LLC, a human resources consulting firm in Lincolnshire, Ill., rolled out Lotus Software Group's SameTime real-time collaboration service to about 14,000 seats this summer, said technical architect Ryan Mitchell. "We found usage exploded," he said. "We have specifically turned off the capability to connect to [America Online Inc.'s Instant Messenger], so we keep it in the company — for now."

Increasingly, said Radicati, large organizations are thinking about adopting unified messaging systems that integrate many technologies, including instant messaging, into a single user mailbox. "The convergence of e-mail, voice mail, mobile messaging, fax and rich media will be key in the next few years," she said.

Corporations that adopt unified messaging systems will almost certainly change as a result, Radicati added. "Gathering all these technologies into a single solution will force IT departments to evolve, to take responsibilities for telephony, webcasting, rich media and other services that are generally considered non-IT. It could have broader political implications for the entire company."

Unified messaging systems will become more important as the number of telecommuters grows. In a recent survey of 1,953 IT workers by Bloomington, Minn.-based Techies.com Inc., 48% of the respondents said they telecommute at least part time. And according to Radicati, the growing number of mobile workers will strongly influence the need to combine all communications into a single resource.

"Everyone wants a single location to do all their work, and we were considering unifying voice mail and e-mail next year," said Cyr. "But we can't — it would only contribute to the storage problem we're already having."

Morgan is a freelance writer and consultant in Minneapolis.

E-MAIL ADMINISTRATION

Managing the Messaging Deluge

BY JENNIFER DiSABATINO

At the beginning of the 1990s, managing e-mailboxes wasn't much different than managing traditional mailboxes. It was just another administrative duty delegated to secretaries and office assistants.

"Having come out of a convenient little executive toy in the last decade to an infrastructure-critical application is [e-mail's] biggest accomplishment of the last decade," said Michele Rubenstein, president of the EMA, formerly the Electronic Messaging Association and now a forum within Menlo Park, Calif.-based The Open Group.

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"The number of users has proliferated from hundreds [in one company] to hundreds of thousands when you think about customers and suppliers," said Jack Cooper, CIO of Bristol-Myers Squibb Co. in New York.

"Reliability of the systems is always a challenge because it's something that people are always looking at," said Ryan Mitchell, a former e-mail administrator at Hewitt Associates LLC in Lincolnshire, Ill.

Early business use of e-mail was strictly inside the corporation. E-mail software wasn't built to exchange messages between systems. For administrators, it kept things simple. Then came standards. Standards allowed everyone to send e-mail to anyone, since we all use the same protocol to transfer e-mail. Secure Multipurpose Internet Mail Extensions. In addition to the security implications, administrators must now contend with the massive volume of messages that need to be stored, Mitchell said.

"The amount of storage and the security and the metadirectory that keep the directory accurate becomes an important task," Cooper said. "You have to carefully monitor and access the e-mail storage. If not, it can become a huge hog of resources."

Some companies, like Chicago-based The Boeing Co., put strict limits on their users' mailboxes. Others simply warn a user when his mailbox has gobbled up too much disk space. But volume also brings another problem.

Companies need to get client and partner lists integrated into their directories, said Dana Gardner, an analyst at Aberdeen Group Inc. in Boston.

E-mail administrators must set up each user account, an encryption key associated with that account and the user's access rights. Some also manage what kind of information gets outside the firewall. Scanning software can do this, but the task has as much to do with establishing policies as with technology, and that creates more work for the administrator.

It's almost impossible to keep track of what comes in, and, just as important, what goes out. A digital rights management system, software that protects intellectual property from flying out onto the Internet, is one solution, but it requires role management.

"The issue of role management is, in my opinion, tied in with the whole concept of identity management," Rubenstein said. "That ID can be an entity like a router or a person, or it could be a group. How do you manage it? I don't always know [my partners]. I haven't done business with them for 20 years. I may only do business with them once in a lifetime."

The fact that you can get at mail in many ways from many places "distributes intellectual property to places you'll never be able to manage it," said Mitchell. "We're trying really hard to set policy, but policy only goes so far."

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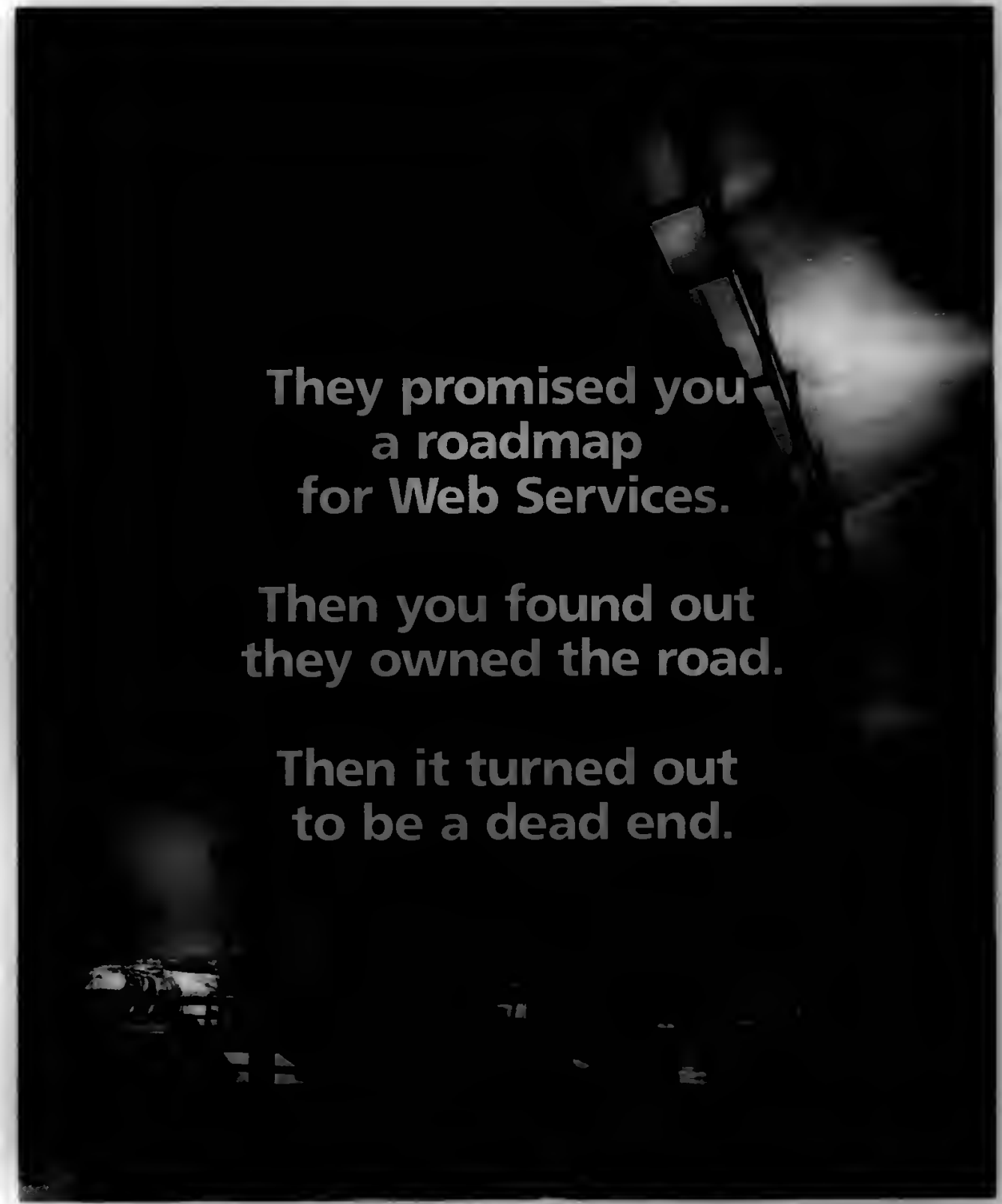
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a roadmap
for Web Services.
Then you found out
they owned the road.
Then it turned out
to be a dead end.

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These servers deliver a robust J2EE™ certified platform, including JSP,™ Java Servlet and EJB™ support, and an integrated transaction monitor for managing distributed transactions. SOAP-enabled, these products form a scalable, intelligent deployment environment for today's Web apps and tomorrow's federated Web Services.

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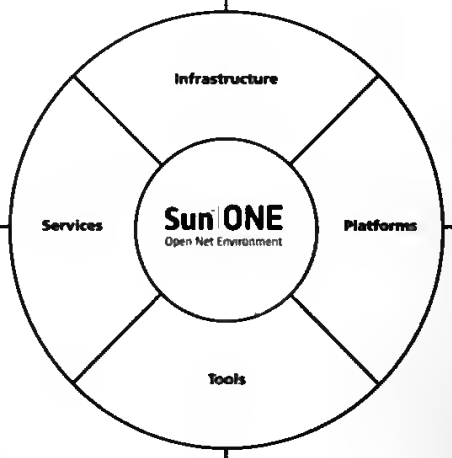
This server enables IT professionals to easily integrate systems with internal business processes, as well as with partner processes outside the firewall. It supports XML, XSLT, HTTP, JMS, SOAP, LDAP and a host of industry-standard protocols, allowing companies to not only "talk business," but actually do business.

iPlanet Portal Server

This server has it all for community and membership management and service delivery. With aggregation, presentation, security, personalization, search and indexing capabilities, it delivers a customized experience for customer, employee and partner communities. New Instant Collaboration Pack lets communities work together in real-time securely.

iPlanet Directory Server

The iPlanet Directory Server is all about community, identity and profile management. It delivers the user management infrastructure that handles high volumes of community information. As the industry's #1 rated LDAP directory, it is capable of managing millions of entries and thousands of queries per second, per server.



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E-MAIL SECURITY

The Wild, Wild West

BY JENNIFER DiSABATINO

When the first e-mail system was created on the Arpanet, security wasn't really a problem. Only researchers and some government workers had access – it was essentially a closed network. While there were abuses, the potential for security breaches was minimal.

"It was point to point," said Michele Rubenstein, president of the EMA, formerly the Electronic Messaging Association and now a forum within Menlo Park, Calif.-based The Open Group.

"The next phase of e-mail security was actually less secure because the Internet began to grow," Rubenstein said.

With the exception of Lotus Notes, which was used point to point within organizations and always had some sort of encryption, there was no control over what employees sent out, where they sent it or what they received.

"Right now, I think we're going more on faith than on anything else," Rubenstein said.

Whether it's a virus or intellectual property, companies still struggle to control what comes into and goes out of their networks.

Anne German, vice president of applications services in the IT department at AFLAC Inc. in Columbus, Ga., said opening up the corporate e-mail system to the Internet was her biggest security challenge.

AFLAC generates 15,000 to 20,000 e-mails per day. Of those, 5,000 to 10,000 are sent externally.

Thanks to that traffic to and from the Internet, in September alone AFLAC had 450 hacking attempts and more than 20 viruses. AFLAC scans for viruses at the gateway and scrubs virus-prone extension types such as .exe. "We don't receive executables, period," German said.

Protecting AFLAC's intellectual property assets from escaping the corporate e-mail system is also a primary concern. German said her e-mail system scans all messages for keywords and content internally between desktops and as messages pass to and from the Internet.

"We have gotten a lot heavier controls as to what information is allowed out and allowed in. We have fairly good scanning to know what is going out and coming in," German said.

Virus-scanning software at the gateways to the Internet, between desktops and on servers offers some protection, but users who download infected personal e-mail still put their companies at risk.

"It's the wild, wild West," said Ryan Mitchell at Hewitt Associates LLC in Lincolnshire, Ill. Mitchell was a Lotus Notes administrator for seven years.

Encryption may not be the answer because, with competing encryption standards, users from different organizations can't share encrypted material easily, if at all.

"Until security becomes as transparent as typing an address, users just aren't going to do it," Mitchell said. "[Encryption] key management is a huge issue. . . . Until that panacea of the key server in the sky shows up, I think it's going to be difficult to do encryption."

EMA is developing public-key infrastructure interoperability standards with users like The Boeing Co. in Chicago. The goal is to make it possible for companies to communicate and share information securely with their partners, said Rubenstein. "EMA and [the European chapter of] EMA collaborated on a paper that delineates what users see as the barriers to electronic business today. Those barriers are located in the messaging and security areas," Rubenstein said.

FACT

28%

of workplace e-mail users receive more than 20 messages a day – the average is 32 e-mails received at work.

SOURCE: THE GALLUP ORGANIZATION FOR PRICEWATERHOUSECOOPERS, N.J.

FACT

51%

of e-mail users in the workplace don't think [illegible]

"[illegible]"

SOURCE: THE GALLUP ORGANIZATION

Mari Keefe, Gary Anthes, Sami Lais and Dan Verton contributed to these stories.

Quick Link For more coverage of e-mail, including an interview with Vinton Cerf and further analysis of e-mail's impact on business and society, and to access a forum where you can share your views on the topic, visit: www.computerworld.com/q/?a1230

Four Decades of E-Mail

1965

Tom Van Vleck and Noel Morris create a Mail command for the Compatible Time-Sharing System at MIT.

Fall 1971

Ray Tomlinson writes a program to send messages across a distributed network and chooses the @ sign to indicate an address outside the local network.

1973

After just two years, e-mail comprises 75% of all Arpanet traffic among 23 universities and government research centers.

Vinton Cerf and Bob Kahn create TCP/IP, coin the term *Internet*.

1976

The U.S. Department of Defense decides that TCP/IP will be the only protocol used on Arpanet.

February 1976

"In a new kind of British invasion, Queen Elizabeth II of England becomes the first head of state to send an e-mail message." (*U.S. News & World Report*, March 22, 1999)

Fall 1976

Jimmy Carter and Walter Mondale use e-mail every day during their campaign to coordinate itineraries. A single message costs $4. (*U.S. News & World Report*, March 22, 1999) ▸

1979

Usenet created at the University of North Carolina with three newsgroups. ▾

usenet.com

April 12, 1979

Kevin MacKenzie proposes adding some emotion to the dry, text-only medium of e-mail. Perhaps, he said, we could expand the punctuation used in e-mail messages. To indicate that a sentence is meant to be tongue-in-cheek, he suggests adding -) at the end of the sentence.

November 1983

The Domain Name System (DNS) is created. Designed by Jon Postel, Paul Mockapetris and Craig Partridge to support the e-mail addressing space, DNS gave us the common address endings we use today, including .com, .edu, .gov, .int, .mil, .net and .org.

November 1984

Lotus Development Corp. announces Jazz for Macintosh. This all-in-one program incorporates spreadsheet, datasheet, database, graphics, word processing and communication tools for Mac users.

1985

Quantum Computer Services is founded in May; in November its first online service, Q-Link, launches on Commodore Business Machines.

Nov. 11, 1987

Microsoft Mail 1.0 for the Macintosh, formerly known as InterMail, ships. Mail lets workgroup members send and receive mail, phone messages, files and graphics electronically. (Microsoft Museum)

1988

Steve Dorner writes Eudora. Named after the author Eudora Welty, this program offers the first graphical interface for e-mail management.

1989

Lotus announces Lotus Notes.

October 1991

Quantum Computer Services becomes America Online Inc.

1992

CERN creates World Wide Web.

Jan. 12, 1993

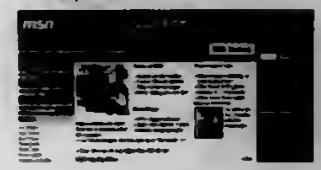
Microsoft introduces the first e-mail client for Windows.

1995

IBM purchases Lotus.

1995

Microsoft debuts its online service, MSN. ▾



January 1996

"Cleveland Browns fans deluge politicians, the media, and the NFL with nearly 2 million e-mail messages protesting the move of the team to Baltimore." (*U.S. News & World Report*)

1996

More e-mail was sent than postal mail in the U.S. for the first time.

Jan. 16, 1997

Microsoft releases Outlook 97.

1998

Microsoft acquires Hotmail.

1999

AOL acquires Netscape Communications Corp.

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AFLAC generates 15,000 to 20,000 e-mails per day. Of those, 5,000 to 10,000 are sent externally.

Thanks to that traffic to and from the Internet, in September alone AFLAC had 450 hacking attempts and more than 20 viruses. AFLAC scans for viruses at the gateway and scrubs virus-prone extension types such as .exe. "We don't receive executables, period," German said.

Protecting AFLAC's intellectual property assets from escaping the corporate e-mail system is also a primary concern. German said her e-mail system scans all messages for keywords and content internally between desktops and as messages pass to and from the Internet.

"We have gotten a lot heavier controls as to what information is allowed out and allowed in. We have fairly good scanning to know what is going out and coming in," German said.

Virus-scanning software at the gateways to the Internet, between desktops and on servers offers some protection, but users who download infected personal e-mail still put their companies at risk.

"It's the wild, wild West," said Ryan Mitchell at Hewitt Associates LLC in Lincolnshire, Ill. Mitchell was a Lotus Notes administrator for seven years.

FACT

of workplace e-mail users receive more than 20 messages a day – the average is 12 e-mails received at work.

SOURCE: THE GALLUP ORGANIZATION, PRINCETON, N.J.

Encryption may not be the answer because, with competing encryption standards, users from different organizations can't share encrypted material easily, if at all.

"Until security becomes as transparent as typing an address, users just aren't going to do it," Mitchell said. "[Encryption] key management is a huge issue. ... Until that panacea of the key server in the sky shows up, I think it's going to be difficult to do encryption."

FACT

of e-mail users in the workplace check their e-mailboxes at least once an hour, including 32% who say that they check it "continuously."

SOURCE: THE GALLUP ORGANIZATION

EMA is developing public-key infrastructure interoperability standards with users like The Boeing Co. in Chicago. The goal is to make it possible for companies to communicate and share information securely with their partners, said Rubenstein. "EMA and [the European chapter of] EMA collaborated on a paper that delineates what users see as the barriers to electronic business today. Those barriers are located in the messaging and security areas," Rubenstein said.

Mari Keefe, Gary Anthes, Sami Lais and Dan Verton contributed to these stories.

Quick Link For more coverage of e-mail, including an interview with Vinton Cerf and further analysis of e-mail's impact on business and society, and to access a forum where you can share your views on the topic, visit **www.computerworld.com/q?a1230**

Four Decades of E-Mail

1965

Tom Van Vleck and Noel Morris create a Mail command for the Compatible Time-Sharing System at MIT.

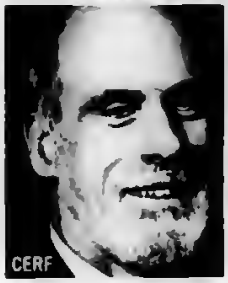
Fall 1971

Ray Tomlinson writes a program to send messages across a distributed network and chooses the @ sign to indicate an address outside the local network.

1973

After just two years, e-mail comprises 75% of all Arpanet traffic among 23 universities and government research centers.

Vinton Cerf and Bob Kahn create TCP/IP, coin the term *Internet*.



1976

The U.S. Department of Defense decides that TCP/IP will be the only protocol used on Arpanet.

February 1976

"In a new kind of British invasion, Queen Elizabeth II of England becomes the first head of state to send an e-mail message." (*U.S. News & World Report*, March 22, 1999)

Fall 1976

Jimmy Carter and Walter Mondale use e-mail every day during their campaign to coordinate itineraries. A single message costs $4. (*U.S. News & World Report*, March 22, 1999)

1979

Usenet created at the University of North Carolina with three newsgroups.

usenet.com

April 12, 1979

Kevin MacKenzie proposes adding some emotion to the dry, text-only medium of e-mail. Perhaps, he said, we could expand the punctuation used in e-mail messages. To indicate that a sentence is meant to be tongue-in-cheek, he suggests adding -) at the end of the sentence.

November 1983

The Domain Name System (DNS) is created. Designed by Jon Postel, Paul Mockapetris and Craig Partridge to support the e-mail addressing space, DNS gave us the common address endings we use today, including .com, .edu, .gov, .int, .mil, .net and .org.

November 1984

Lotus Development Corp. announces Jazz for Macintosh. This all-in-one program incorporates spreadsheet, datasheet, database, graphics, word processing and communication tools for Mac users.

1985

Quantum Computer Services is founded in May; in November its first online service, Q-Link, launches on Commodore Business Machines.

Nov. 11, 1987

Microsoft Mail 1.0 for the Macintosh, formerly known as InterMail, ships. Mail lets workgroup members send and receive mail, phone messages, files and graphics electronically. (Microsoft Museum)

1988

Steve Dorner writes Eudora. Named after the author Eudora Welty, this program offers the first graphical interface for e-mail management.

1989

Lotus announces Lotus Notes.

October 1991

Quantum Computer Services becomes America Online Inc.

1992

CERN creates World Wide Web.

Jan. 12, 1993

Microsoft introduces the first e-mail client for Windows.

1995

IBM purchases Lotus.

1995

Microsoft debuts its online service, MSN.

January 1996

"Cleveland Browns fans deluge politicians, the media, and the NFL with nearly 2 million e-mail messages protesting the move of the team to Baltimore." (*U.S. News & World Report*)

1996

More e-mail was sent than postal mail in the U.S. for the first time.

Jan. 16, 1997

Microsoft releases Outlook 97.

1998

Microsoft acquires Hotmail.

1999

AOL acquires Netscape Communications Corp.

BRIEFS

IBM Donates Software

IBM said last week that it's donating $40 million in software to the open-source community. The new Java-based, open-source software, known as Eclipse, will let developers share code from multiple vendors, enabling them to integrate business processes used to create e-business applications such as those for Web services, IBM said.

Oracle Veteran Named Chairman of eLance

Ray Lane, former Oracle Corp. president and chief operating officer, has been named chairman of eLance Inc., which recruited him to help boost its procurement services for large businesses. Sunnyvale, Calif.-based eLance also announced that it has named Fabio Rosati president and CEO. Rosati most recently headed the Strategy & Transformation practice at Paris-based Cap Gemini Ernst & Young.

SSA Bares All to Win Customers

After filing for bankruptcy protection in April last year and subsequently being acquired by New York investment firm Cerberus Capital Management LP, SSA Global Technologies Ltd. needs to overcome concerns about its profitability, said Michael Greenough, CEO of the Chicago-based manufacturing applications developer. Greenough told *Computerworld Hong Kong* that his firm is presenting its financial statements to potential customers to ease such apprehensions.

Short Takes

CISCO SYSTEMS INC. announced first-quarter profits that beat Wall Street forecasts but still plummeted 70% compared with the same period a year ago. . . . Houston-based BMC SOFTWARE INC. is planning to cut its worldwide workforce of more than 6,800 workers by 7%, or approximately 475 employees.

HP Founders' Kin Say No to Compaq Merger

Hewlett, Packard families could sway other stockholders to scuttle huge deal

BY LINDA ROSENCRANCE

ANALYSTS LAST week said that the decision by the families of the founders of Hewlett-Packard Co. to oppose the computer giant's planned merger with Compaq Computer Corp. could be the kiss of death for the deal. The families' opposition could influence other shareholders to also vote against it, they warned.

Brett Miller, an analyst at A.G. Edwards & Sons Inc. in St. Louis, said the announcement by the Hewlett family is a major vote of no confidence, albeit a symbolic one. HP CEO Carly Fiorina "is putting her job on the line," he said.

Laurie McCabe, an analyst at Summit Strategies Inc. in Boston, said the opposition to the $21 billion merger by the families sends the same message that 90% of financial and industry analysts have been sending since the merger was announced. Does it make sense for "the two companies — with things not going as well as they should be — to act like beasts trying to devour each other?" she asked.

"At a minimum, there should be some cause for concern," McCabe said. "And having a big shareholder — and member of the founding family — publicly voice their disapproval undermines Carly's position. She is going to be more under the gun now to prove this can work."

Jonathan Eunice, an analyst at Illuminata Inc. in Nashua, N.H., said the Hewlett family's decision was, at the very least, embarrassing to HP. "HP's always been a friendly company, and friendly, soft and cuddly companies have a lot more trouble in mergers, unlike hard-as-steel companies like Computer Associates," he said.

Dan Kusnetzky, an analyst at IDC in Framingham, Mass., said the Hewlett family is probably concerned about the anticipated loss of business from Fortune 1,000 companies when products from Tandem Computers Inc. and Digital Equipment Corp. — acquired by Compaq in 1997 — are phased out.

"They're planning to retire those products as soon as possible [after the merger]. Anyone using those products will strike back by buying them from competitors," he said.

According to published reports, David W. Packard, son of HP co-founder David Packard, said he intends to join the Hewlett family in opposing the merger. He is founder of the Packard Humanities Institute in Los Altos, Calif.

In opposing the merger, board member Walter B. Hewlett cited sluggish growth in the PC and low-end server markets, the potential dilution of HP's profitable printer and imaging business, and customer uncertainty that could be created after the merger.

The other members of HP's board issued a statement reaffirming their support of the merger and of Fiorina. Compaq's board also issued a statement reaffirming its strong support of the merger. However, the companies declined to comment beyond their official statements. ▶

The IDG News Service contributed to this report.

AT A GLANCE

Family Values

The Hewlett and Packard families own approximately 17.2% of HP. The breakdown:

Hewlett family and its trusts 106 million shares	5.5%
The David and Lucille Packard Foundation 201 million shares	10.4%
Packard Humanities Institute: 25.7 million shares	1.3%

Lucent to Sell Enterprise Professional Services Unit

Firm shifting focus to core customers

BY TODD R. WEISS

Lucent Technologies Inc. said last week that it plans to sell its 1,400-worker enterprise professional services division by the end of the year, as it continues to restructure its business in a tough market.

James Kelleher, an analyst at Argus Research Corp. in New York, said Lucent's decision is consistent with what the Murray Hill, N.J.-based company has been saying and doing for months as it restructures and sheds unwanted divisions in order to eventually serve only its core customers.

"This is just kind of a fraction of [Lucent]," Kelleher said of the services division. "It makes sense from a corporate point of view . . . to just focus on the market they want to be in."

Richard Dean, an analyst at IDC in Framingham, Mass., said the news should be no surprise, since Lucent has been clearly voicing such intentions since last year. "It's another step in the process for Lucent to refocus on its core business," he said.

One problem, however, is that Lucent probably won't get what it's seeking for the division, Dean noted.

"I don't think they're going to get the kind of value out of it that they expect," he said.

> It's another step in the process for Lucent to refocus on its core business.
>
> RICHARD DEAN, ANALYST, IDC

The division provides network consulting, design and integration services to Lucent customers in the Fortune 100 ranks. The unit is headquartered in Sunnyvale, Calif., and is part of Lucent's Worldwide Services business, which has 24,000 employees.

"What we've been doing in the last year is focusing ourselves on our large service providers," because those customers are continuing to generate revenue for the company, said Lucent spokesman Bill Price. "Our top 30 customers make up 70% of our total revenues. You have to make decisions on what fits and what doesn't fit."

Price said the enterprise services group is a "strong business with a talented team" that will likely be sought by another company.

The group was previously part of International Network Services, a company that merged with Lucent in October 1999. It serves more than 600 customers in North America and Europe and ranks as the third-largest network services player in the U.S., according to IDC. ▶

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PATRICIA KEEFE

Dereliction of Duty

CHRISTMAS CAME EARLY to Redmond last week, as our ordinarily tough-talking attorney general and his cowardly minions at the Department of Justice gave Bill Gates what amounts to a whopping gift certificate to the Internet. That Microsoft would want this deal is no surprise.

That the DOJ rolled over is a huge disappointment, however. The last hope for a reasonable remedy are the at least six gutsy state attorneys general who refuse to let it go.

PATRICIA KEEFE is editorial director at *Computerworld*. You can contact her at patricia_keefe@computerworld.com.

Talk about a sell-out. Thomas Weisel Partners, a San Francisco-based investment bank, pretty much summed it up last week, when it characterized the settlement to its clients as "a major win; no substantive change in business model or R&D practices."

So, after three years, thousands of pages of testimony and an estimated $35 million, the Justice Department is settling for no *substantive* changes? Does the government know it got Microsoft convicted of illegally maintaining a monopoly? That ought to count for something. It convinced one judge that the company should be broken up. Couldn't the DOJ persuade another to render a fair penalty? Doesn't it have an obligation to at least try?

But no, for the second time in almost 11 and a half years, a spineless DOJ has delivered a toothless nip to one of the wealthiest and most powerful companies in the world — a company that was not deterred from its agenda one iota by this trial. Look at its recent attempt to block users of some browsers from MSN.

So what can we expect posttrial? The settlement as it stands is so riddled with exceptions and loopholes that it might as well have been inked on Swiss cheese. That the Justice Department's senior nonpolitical staff didn't sign on to the agreement speaks volumes. Bill Gates had to have been laughing up his sleeve when he asserted that "this decree will place significant restrictions on our business."

If losing an antitrust suit — twice — means having to do little more than say you're sorry, what's the point of this entire legal exercise? The lesson for other antitrust targets is clear: Contribute heavily to political campaigns, treat the whole thing as a joke, and the Justice Department will just lie down. ◗

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PIMM FOX

Stop Isolating Your Applications

WINTEL AND LINUX servers don't get any respect.

On the one hand, most servers are treated as boring, generic commodity items that grab attention only if they fail. Yet they require air conditioning, power, space, maintenance and support, and they multiply like rabbits to individually host CRM, ERP and other applications.

PIMM FOX is *Computerworld*'s West Coast bureau chief. Contact him at pimm_fox@computerworld.com.

And because of the nature of IT development projects, server purchases are hardly ever made with a view toward sharing CPU resources.

That's despite the fact that most servers run at utilization rates of about 10%, with peak loads of about 30%, says Len Ceruzzi, director of IT at VMware and former director of microsystems and network technologies at Nasdaq.

From the perspective of IT teams, as long as each team receives the servers necessary to do its job, no one makes a fuss.

The sad truth is that there are tons of spare CPUs sitting in every data center. Virtual partitioning could change this, but some data center managers are still scared to put more than one application on a commodity machine.

For example, there's the conflict of Dynamic Link Libraries that makes it necessary for each library to have its own server. Then you have memory leaks in applications that could cause a whole machine to hang up. Some software, especially database applications, even assumes it owns the whole computer. Operating in a mode referred to as "busy-wait," these applications sit around and spin, chewing up CPU cycles when they aren't doing anything — except costing you money. If you get two of these hogs on one machine, you may end up with a major performance problem.

There are many reasons for granting every application its own server, but there are more-compelling reasons to jettison this mind-set. The first is management time. The second is money.

Maintaining boxes, whether you've consolidated them into one glass-enclosed room or spread them out geographically, and moving them in and out for maintenance and new releases is a management

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nightmare. Just keeping track of the hardware in a data center is a painful, full-time job.

And then there's the cost of unused CPUs.

Why buy new hardware when you can look out over your data center at a sea of machines ruoning at just 10% utilization?

Either the applicatioo deployment has been wrong (unlikely) or you're faced with the chance to consolidate server resources.

The Unix and mainframe world has doue this for years, using hardware partitioning to put multiple applications ooto one operating system.

Now it's time to apply the same logic to Wintel and Linux machines.

With readily available virtual partitioning techoology, you can be efficient with the servers you've already bought. That's the best way to give your hardware some respect.

DAVID MOSCHELLA

Much Depends on Microsoft Panel

ONE OF THE MOST telling tests of recent presidential candidates has been how the quality of their vice presidential choices reflected the likely success of the enterprise.

In 1992, Ross Perot somehow selected the bewildered and sadly out of place retired Navy Vice Adm. James Stockdale. In 1996, Bob Dole couldn't persuade Colin Powell to give the Republican ticket a chance, and last year, the formidable Dick Cheney gave George W. Bush the credibility he needed to edge out Al Gore.

All of this came to mind as I read the contorted proposed settlemeot between the government and Microsoft. Unless the states still contesting the case manage to extract more concessions or tougher language, the settlement's future effectiveness will be op to the three-person technical committee required to be in place within 30 days of the agreement's approval. The committee — with ooe member chosen by the government, one by Microsoft and one agreed to mutually — is to be granted broad powers to make sure that the agreement is effectively implemented.

DAVID MOSCHELLA is an author and independent consultant. Contact him at dmoschella@worldlink.net.

As things look now, the committee will be crucial because the agreement itself is so complex and unsure of itself that ongoing buman oversight and interpretation will be required. It's the sort of messy situation that many technical professionals might wish to avoid, and therefore the first real test will be wbether individuals of sufficient reputation and credibility can be recruited for the initial 30-month term. The government's choice will be particularly revealing.

Despite the understandably harsh criticism of this deal, it holds some potentially meaningful curbs on Microsoft's power. Uniform Windows terms and conditions, the banning of exclusionary contracts and the providing of "timely" interface informatioo are significant improvements. The problem is that the settlement contains so many exceptions, conditions and delays that it could easily dissolve into a fog of differing interpretations. It's the sort of challenge that a strong panel might be able to manage but that many qualified candidates will view as a oo-win situation.

Of course, the proposed settlement could have, and should have, been tougher. But, ultimately, these cases are almost always shaped by the wider political-economic context, and recent events have made it much tougher for the government to maintain a strong anti-Microsoft position. John Ashcroft and his team simply have many more important things to worry about right oow, and today's fragile economy, stock market and tecb sector have bent the entire public sector toward active corporate support.

From this perspective, the current situation is analogous to the Reagan administration's ending of the IBM antitrust suit in 1982. While the administrations are different, the economic similarities actually run much deeper. In the early 1980s, the IT industry's biggest fear was the perceived rise of Japan Inc., so it looked like it would be rash and foolish for the government to unilaterally disarm the nation's IT industry standard-bearer. It was much safer not to act, especially given the simultaneous decision to break up AT&T.

Given the enormous pressure to settle this case, it's not surprising that the government gave ground and Microsoft secured more favorable terms. The result is this proposed skeleton of a plan that, if it stands, only the three wisepeople (along with a changed political-economic context) can possibly bring to life. The task would be daunting. Will there be any serious volunteers?

READERS' LETTERS

Training for Managers

THE AMERICAN Management Association (*www.amanet.org*) offers many fine courses in management ["Poof! You're a Manager," Business, Oct. 29]. It has a thick catalog of classes. I have taken several of these, and they have proved to be very valuable in the IT environment. The Project Management Institute (*www.pmi.org*) offers certification in project management. The certification isn't specific to IT, but the principles certainly apply to IT projects. I have been involved with IT for 14 years and have discovered that management classes can tremendously help the new manager.

Michael J. Raboy
Database administrator
Pragmatic Business Systems
Thousand Oaks, Calif.

YOU SAY the best advice for new managers is, "Do unto others as you would have them do unto you." My approach is a little different: Treat people the way they want to be treated. Don't assume that employees will be happy if you forget or delay their reviews or anything else to do with money, reward or recognition. Just realize that oot everyone wants to be rewarded or recognized in the same way.

Johanna Rothman
President
Rothman Consulting Group Inc.
Arlington, Mass.

Let's Hear It for IT

IT IS TRULY SAD that it takes a national tragedy to realize how dependent companies are on computer systems, the Internet and, of course, the IT staff. I applaud Alex Torralbas for standing up for us little people and putting it out there for everyone to see ["Events of Sept. 11 Show That IT Has Heroes, Too," News Opinion, Oct. 29].

Greg Doesa
Network manager
Charlotte, N.C.

Who's the Monopolist?

TO ILLUMINATE the lies in the editorial "Fight the Monopoly" [News Opinion, Oct. 29], I'd like to draw a comparison between Sun Microsystems and Microsoft.

Sun controls its proprietary Java language, which isn't a W3C, ANSI or ECMA standard. Sun told developers for years that it would make Java a third-party standard, but it pulled back. Java-to-Java communication uses proprietary protocols by default.

Microsoft is building a system called .Net that depends on XML (a W3C standard), SOAP (also a W3C standard) and UDDI (an industry consortium standard). Microsoft has developed a Common Language Runtime (CLR) and the C# language and has submitted both to ECMA. So .Net is becoming less platform-dependent than Java.

Matthew Griscom
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North Beach Elementary School
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Griscom@nwcpp.org

Editor's note: *Microsoft says it has submitted only a subset of the CLR, the Common Language Infrastructure, to ECMA.*

I PRAISE YOU for taking a stand. Look at the bright side: It shouldo't be too much longer before mighty Microsoft has *all* our money; then it won't have anyone to prey on except itself.

Steven Rubenstein
Murfreesboro, Tenn.
SJR@ElectricSpectric.com

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

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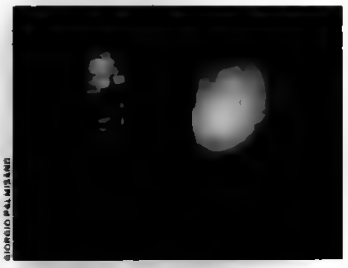
THIS WEEK

PLAYING THE BOARDS

CIOs who sit on the boards of vendor companies can gain valuable business experience that they can apply to their primary jobs. But some IT leaders contend that these relationships pose serious conflicts of interests. PAGE 32

CONNECTING WITH SLAs

Striking effective service-level agreements (SLA) with communications providers means identifying upfront the specific skill sets the vendor will provide, as well as establishing performance metrics, say practitioners. PAGE 38



GIORGIO PALMISANO

HOT SKILLS FOR A COLD MARKET

Face it — the job market for IT professionals stinks. But despite the layoffs, declining salaries and disappearing bonuses, you can improve your marketability if you have certain key skills, says Paul Raines of Barclay's Capital (above) and other IT professionals. PAGE 44

TRACKING SALES FROM START TO FINISH

A new enterprise incentive-management system at Welch Allyn should help the medical supplies maker save up to $1 million per year by helping it track and reward its salespeople more effectively. PAGE 48

JOE AUER/DRIVING THE DEAL

Year-end Closeouts

SINCE THE END OF THE YEAR is only weeks away, it's a great time to secure some price or contractual concessions from vendors whose books close Dec. 31. For inspiration, take the following software deal that was completed just before the end of a vendor's fiscal year.

The customer had a vendor software license that was several years old. The customer acquired a new division, which had its own license with the same vendor that was about a year old. Because of the acquisition, the customer needed an additional $500,000 worth of the software.

As we've discussed many times before, to do a good deal, you need great leverage. As negotiations for this deal began, it appeared to be nirvana for the vendor, since it thought it had all the leverage. There would be incremental additional revenue from a dependent customer with little or no sales or negotiation effort.

But another basic oegotiating tenet is to know your opponent. The customer's procurement professionals prepared for negotiations by first researching the vendor. Thanks to the Internet, this once time-consuming process has become a snap. They checked out the vendor's Web page, its press releases and the security interest filings of financiers oo company assets. The customer team also found the vendor's financials, along with a warning of a projected drop in fourth-quarter profits. This set off a bell that the vendor might do more than what was normally expected to land the business.

One key piece of information the negotiators learned was that the vendor's fiscal year eoded June 30. They knew most vendors get *really* oegotiable at year's end. The date when the parties planned to negotiate was June 25 — what a break!

With that knowledge, the customer team turned its attentioo to the more appealing of the two license agreements the company had with the vendor. It provided much more flexibility in using the software throughout the corporation, better remedies and a cap on maintenance price increases. The customer would also need fewer additional copies of the software if it could preserve the agreement's terms permitting license transfers within the enterprise.

When negotiations started, the customer insisted on getting better pricing and using the more favorable license agreement to govern the new transaction. The vendor responded with multiple ploys. Its representatives said the following things:

- This price is good only until the end of our fiscal year (five days away).
- We can't give you a better deal than we give the federal government, because of a contract requirement guaranteeing the feds the best price.
- There's a price increase coming in July.
- We don't use that old license agreement anymore. We have a new and improved one.

The customer's negotiators responded perfectly. They said, "We dooo't have to do this deal now. We can do this deal later. As a matter of fact, we don't have to do this deal at all. We can't sell your deal to our managemeot as it's currently structured. If you want this deal this fiscal year, do it our way — or hit the highway. It's your choice."

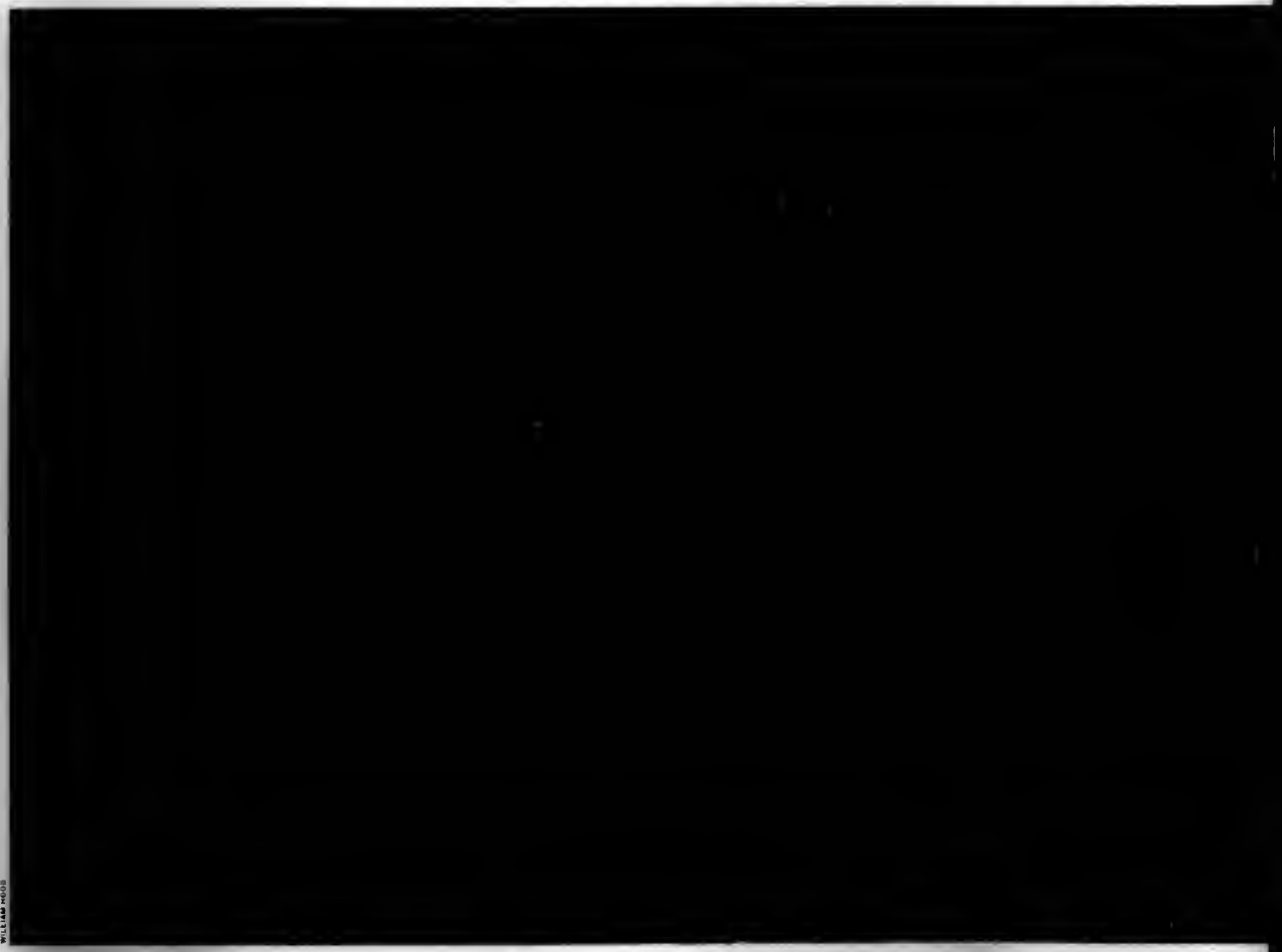
The vendor complained, whined, pouted and threatened to walk away. The customer's representatives just listened and repeated their position.

Joe Auer is president of International Computer Negotiations Inc. (www.globalnegotiate.com), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High Tech Acquisition Professionals. Contact him at [redacted]

After a few days and some phone calls made behind the negotiating team's back, the vendor's representatives realized that all the key customer players were aligned as a team and solidly behind the negotiators.

The vendor caved. On June 29, the customer signed a deal that more than doubled the software discount from 20% to 41% on a comparable oumber of licenses and extended the more favorable license to cover the merged organization. This was a better deal than the customer thought it could get at first, but year-end pressures undoubtedly gave the vendor incentives to give special concessions. So, informatioo is power!

This case study should also remind you that you must be aggressive to extract meaningful concessions from vendors.



WILLIAM HOOD

Playing the

Boards

CIOs are split on whether a seat on the board of directors of an IT company is a huge benefit or poses a conflict of interests. By Kevin Fogarty

AS CIO AT MCDONALD'S CORP. and then AOL Time Warner Inc., Carl Dill spent plenty of time meeting with top managers — aligning IT with business goals, sponsoring new projects, negotiating budgets.

But it wasn't until he became a member of the board of directors of tiny Chicago-based contract development house ThoughtWorks Inc. that he really understood the perspective of the people who ran the businesses he's worked at, he says.

The bottom-line perspective of a venture capitalist gave him more of an appreciation for the profitability of a company, as well as a tougher outlook in evaluating new hires and other expenses, Dill says.

"As CIO, my stock options and bonuses would be affected by profitability, but I wouldn't feel ultimately accountable, the way the CEO or a board member feels," Dill says. "And the VC perspective keeps you honest in hiring, in terms of whether these people will actually generate new business or are just cool technicians."

The business education CIOs get sitting on the board of directors of outside technology companies is an incredible career boost, according to CIOs who approve the practice. However, detractors warn that board roles can not only create conflicts of interests, but can also divide an executive's attention, loyalty and the cohesiveness of the management team at his primary employer.

Figures on how many CIOs actually sit on vendor boards are hard to come by, but searches against San Francisco-based Business Wire and other sources of corporate press releases showed a steady increase in the number of technology companies announcing that they have hired potential customers to help direct their businesses.

Advocates of the practice, like Robert Carter, CIO at Memphis-based FedEx Corp., say sitting on the board of a vendor company gives CIOs a business education they could never get anywhere else.

"It's fun and rewarding, and I believe it helps any executive expand their horizons to see different business problems," Carter says.

Opponents of the practice, such as Bob Schwartz, president of Panasonic Management Information Technology Services Co. in Secaucus, N.J. (the IT department of Panasonic Co.), say sitting on the board of a technology company inevitably compromises the integrity of a CIO, no matter how much he may try to avoid it.

Board seats, which typically come with five-figure salaries, force CIOs to serve two organizations, each of which has a legitimate claim on his time and loyalties.

"I believe everyone has some integrity and tries to do the right thing," Schwartz says. "But I still have to believe, just based on human nature, that if you are asked to make decisions on a board of directors, which is a part-time position, you're still very much associated with the company that employs you. And that is your primary responsibility."

Schwartz says he has declined offers or inquiries about board seats as well as spots on advisory boards that include compensation.

"Keeping the relationship at arms' length eliminates any potential cloudiness about conflict," Schwartz says.

Unlike positions on vendor advisory boards or in other informal associations, an outside CIO paid to sit on a board of directors would be obligated to act in the best interest of shareholders, even at the expense of his own company's interest, argues Peter Sole, CEO of The Research Board Inc., a New York-based think tank devoted to the concerns of CIOs.

"It's quite clear where your responsibility lies when you're in that room," says Sole.

But sitting in that room and soaking in the experi-

CIOs in Directors Seats

A few IT executives who also serve as directors of technology companies:

■ Gregor S. Bailar
CIO
Capital One Financial Corp.
Falls Church, Va.
(Former CIO at Washington-based Nasdaq Stock Market Inc.)
On the boards of: Boston-based marketing and technology services firm Digitas Inc. since July; Mountain Lakes, N.J.-based legacy and Web integration company Red Oak Software Inc. since November 2000

■ Eugen Beckert
Senior representative
DaimlerChrysler Services AG
(Former CIO of financial services Asia/Pacific at DaimlerChrysler)
Berlin
On the board of: Custom software company NetSol International Inc. in Calabasas, Calif., since July

■ Robert B. Carter
CIO
FedEx Corp.
Memphis
On the boards of: Application service provider Jamcracker Inc. since March; E-commerce technology firm Asera Inc. in Belmont, Calif., since December 2000

■ Dawn LaPore
Vice chairman/CIO
The Charles Schwab Corp.
San Francisco
On the board of: San Mateo, Calif.-based Viador Inc., a provider of enterprise information portals, since July 2000

■ Daniel L. Roberts
Executive vice president/CIO
The PMI Group Inc.
San Francisco
On the board of: Fremont, Calif.-based middleware integration firm Versant Corp. since last month

■ Kathy Britain-White
Executive vice president/CIO
Cardinal Health Inc.
Dublin, Ohio
On the boards of: CMore Medical Solutions Inc., a Minneapolis-based health care software and services firm, since September; National Service Industries Inc., an Atlanta-based lighting, chemicals and textiles firm, since October 1999

■ Carl Wilson
CIO
Marriott International Inc.
Bethesda, Md.
On the board of: Software Architects Inc., a Chicago-based application development firm and provider of professional services, since September

Playing the Boards

Continued from page 33

ence of other senior executives — as well as making contacts and building knowledge about directing a company at the strategic level — can be invaluable to CIOs, whose experience tends to be too narrowly focused on technology, Sole says.

"You get a good financial education and management education," Dill says. "You get the chance to work directly with VCs see how they think about potential acquisitions. It's a tremendous benefit to a CIO to be on a full board that you don't get on an advisory board."

That's one of the major reasons FedEx CEO Frederick Smith encourages all senior executives at his company to sit on the boards of other businesses, Carter says.

"There's a learning opportunity as you get exposure to the caliber of individuals that sit on these boards," Carter says. "And, contrary to the thought that it's a drain from your primary responsibilities, we look at it as being complementary, an asset to current responsibilities to get that experience and exposure."

Current and former CIOs can also use their time on boards to exercise their nontechnological management muscles, which might not get such a workout otherwise, Dill says.

"We're not just technologists," he says. "We've had to run significant organizations where we've had to do lots of people development. Being able to get into those issues is part of what's attractive about being on a board. You get into a lot more than just what are the technology trends and products and services in the future."

Potential for Trouble

The most obvious potential conflict is one in which a CIO has to make decisions on a board of directors that might adversely affect his primary employer.

That situation rarely comes up, however, because CIOs don't usually sit on boards of companies with which they do business, Sole says.

In fact, board-level relationships are too important to waste on acquiring a single new customer, according to Gene Petrie, CEO of Chicago-based Software Architects Inc., which announced in September that Carl Wilson, CIO at Bethesda, Md.-based Marriott International Inc., had joined its board.

> Companies frequently have outside CEOs on boards, and no one calls that into question.
>
> HARRIS N. MILLER, PRESIDENT, INFORMATION TECHNOLOGY ASSOCIATION OF AMERICA

Quick Link To find out why smaller vendor companies typically recruit CIOs from large companies to sit on their boards, visit our Web site: www.computerworld.com/q?24436

"It doesn't make sense to put someone in a conflicted situation," Petrie says. "When we add someone to the board, it's to help define strategies and to help the company grow; it's not for one project or to get one bit of business."

Mariott isn't a current customer, though Petrie says he wouldn't turn down business from the hospitality giant if the opportunity presented itself.

Cupertino, Calif.-based application service provider Jamcracker Inc. tapped Carter to sit on its board, despite a FedEx policy preventing it from doing business with any company on which its senior executives serve as board members.

"They were more interested in having an enterprise CIO as a part of the team, someone who could help guide them in the processes, the challenges of large-corporation CIOs, than they were in having one sales target" among thousands of potential sales targets, Carter says.

Even when the board member's company is a customer, not all board decisions will pose a potential conflict, says Harris N. Miller, president of the Information Technology Association of America, an industry trade association in Arlington, Va. Board members regularly recuse themselves from voting on issues about which they have conflicts, or, if there was a serious dispute, one could simply resign, he says.

"Companies frequently have outside CEOs on boards, and no one calls that into question," Miller says. "There's no inherent increase in the conflict if it's a CIO instead."

ThoughtWorks was able to secure the knowledge and cachet of a major CIO, without the conflict, by hiring Dill, a former CIO who works as a freelance industry consultant for companies with which he would like to work.

The company hired Dill for his savvy at creating strategic long-term technology plans, as well as for his big-company experience, says ThoughtWorks CEO Roy Singham.

Dill is on the board as a "champion" to keep the company focused on client needs, Singham says.

Of course, he also hired Dill for the air of credibility that a CIO emeritus brings to the company. "Having someone of Carl's status is a symbol to our customers," Singham says.

Political Quagmire

However, CIOs who steer clear of any conflicts can still run afoul of corporate politics and misunderstandings.

In companies in which few other executives, if any, sit on boards, colleagues "may think you're wasting your time and that you should be paying more attention to what's going on inside the company," Sole says.

While some companies are happy to have top executives hold spots on symphony boards or other high-profile positions, those that expect top executives to "work 100 hours a week and devote all their time and energy, other than family time, on the company" are unlikely to look favorably upon a CIO with a yen for outside directorships, Miller says.

With both advisory board seats and board of director spots, the important thing is for a CIO to anticipate potential conflicts and decide ahead of time how he will respond to them, Miller says. Knowing that conflicts are possible is enough to defuse most situations, he says.

Dill recommends disclosing any potential paid relationships or conflicts to senior managers, many of whom may recognize the value of the experience gained from both full board and advisory board seats.

"The temptation is to do this off to the side as a career enhancer," Dill says. "That's where you can run into the policy issues and the loss of trust with senior management. You just can't afford to do that."

Kevin Fogarty is a former Computerworld *editor. Contact him at kevinjfogarty@yahoo.com*

THE ADVISORY BOARD APPROACH:

Some Content Without the Guilt

Board seats at technology companies may come with the baggage of legal and fiduciary responsibilities, but they're better than advisory boards, which offer only the illusion of inclusion, according to Robert Carter, CIO at FedEx.

"I can get a daylong briefing at any software company in Silicon Valley," says Carter. "But to get below the sales pitch and into the core workings of the company, you need to be a board member. Even advisory boards do not go nearly as deep as board members go."

Advisory boards give members "70% to 80% of the exposure to the company's policies. You get closer to the [vendor's] management team, but you're not as trusted as a board member," says Carl Dill, formerly CIO at AOL Time Warner and McDonald's, who sits on the boards of ThoughtWorks and other companies. "You don't get a full overview of the financials and people strategies. It's a little bit more arms-length."

Spots on advisory boards are also relatively easy to snare, while seats on the boards of well-run companies are much sought-after by top-quality executives, Carter says. The more skilled or experienced the other members of the board, the more the CIO can learn, he says.

Even advisory board positions – many of which pay honoraria in cash or stock – can set up a conflict if the CIO is trying to negotiate with a vendor that previously paid for his advice.

"That's why I have not accepted any position for which there is compensation," says Bob Schwartz, president of Panasonic Management Information Technology Services. "That's not a formal policy, just a personal choice. It allows me to operate more freely, without having any sense of obligation."

In most cases, it's a much better fit to be on an advisory board while you're a sitting CIO and then go on to the full board later on, when you're doing consulting and other work, says Dill.

– *Kevin Fogarty*

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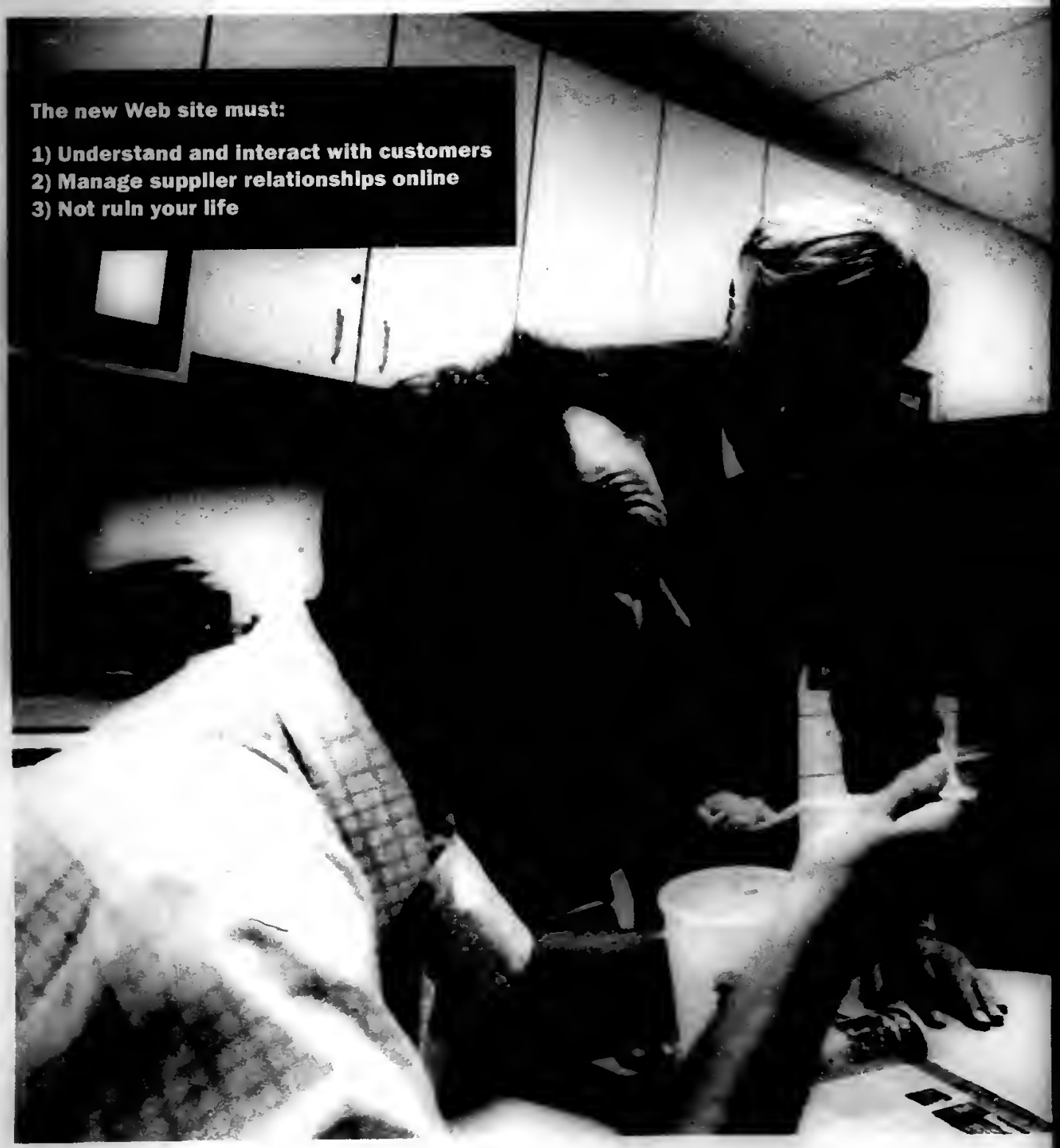
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Connecting With Telcos

Best practices include documenting vendor promises and defining specific technical support skills. By James Cope

THE BEST WAY TO GET greater returns on expenditures with communications service providers is to craft service-level agreements (SLA) that track both network and human performance.

Still, IT managers and analysts who have been through the process say that doesn't mean customers should write up intricate agreements that collapse under their own weight. Instead, managers involved in SLAs are best served by being proactive and vigilant; they should clarify and record undocumented vendor promises and employ best practices, such as defining the technical support skill levels expected from vendors and naming the provider's senior officials who will be called when problems escalate beyond the norm.

Such approaches ensure that carriers and other providers focus on customer needs instead of on their own bottom lines, says Doug Power, assistant commissioner for the City of Chicago and project manager for Chicago's mammoth metropolitan-area network project.

But service providers are ultimately sales-focused, says Kevin Sterneckert, CIO at Big V Supermarkets Inc. in Florida, N.Y. Recognizing and factoring in fair compensation for specified services may sound unconventional, but Sterneckert says the practice deters vendors from making "low-ball bids" and increases the likelihood that the vendors who are selected will honor their agreements.

SLAs are about keeping promises, Power says. He says the degree to which a service provider keeps its promise is directly proportional to the technical talent of the staff a vendor assigns to the customer's service team. That's why he advises managers to detail the skill levels that a vendor promises and include the head count assigned to the customer in the SLA.

Still, holding vendors to those commitments can be an ongoing adventure, Power warns. "Simply because a service provider has the techies now, doesn't mean they'll have them in the future," Power says.

In addition, IT managers should ask what they're measuring before working specific performance criteria into SLAs, says Lisa Pierce, an analyst at Giga Information Group Inc. in Cambridge, Mass. Case in point: Long-distance providers may report on performance within their own networks but oot necessarily for other providers with which they connect. She also cautions managers to say no to murky language in SLAs. "Averages across a provider's entire frame-relay system, for example, are useless," Pierce notes.

Sterneckert has figured a way to both mitigate measurement problems and discourage vendor finger-pointing. For instance, he has split his company's data networking and some voice services between two different providers. AT&T Corp. handles Big V's frame-relay connections between its headquarters and 31 stores and the packet-based voice services among those sites. A separate SLA with WorldCom Inc. handles teleconferencing services and all long-distance calls made over public voice networks.

While Sterneckert holds quarterly meetings with AT&T and WorldCom to discuss their performance against their respective SLAs, he has also developed his own proprietary process for tracking uptime for the frame-relay circuits his company uses.

"We compare our measurements to reports provided by AT&T," he says. "Typically, we don't find a major difference, but when we do, we figure out what's going on and work through the differences." ◗

Quick Link For advice on what to do when your service provider can't meet the terms of the SLA, go to: www.computerworld.com/q?24067

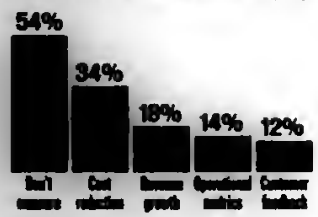
12 Ways to a Better SLA

1. **Go for shorter contract periods,** with options to renew.
2. **Determine if the vendor can make a profit** on your contract without betting on business that's yet to come.
3. **Request that the network** under the SLA covers interconnected networks owned and operated by other carriers; otherwise, create multiple SLAs specifying who's responsible for what.
4. **Define the number and specific skills** of the vendor's technicians who will be available to support the SLA and where they will be located.
5. **List the names and numbers** of senior service provider officials you can call when problems escalate.
6. **Conduct monthly or quarterly vendor meetings** to review performance against the SLA to make sure you're both on the same page.
7. **Have a backup plan** for network outages.
8. **Determine what will be measured,** how it will be measured, and who will measure it.
9. **Have a transition clause** and process in place in case you need to switch to another provider.
10. **Define potential problems** upfront and create a timetable for the vendor to fix them.
11. **Determine fines,** reimbursements or other natural consequences if the provider doesn't meet service levels.
12. **Determine which repair or replacement parts** should be available within an hour.

BY THE NUMBERS

Still Struggling With the Math

How do you measure the success of technology spending?



Base: 50 IT executives at Fortune 1,000 companies. Multiple responses accepted

SOURCE: FORRESTER RESEARCH INC., CAMBRIDGE, MASS., 2001

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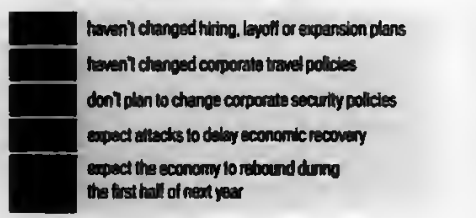
Base: 53 companies using ASP-delivered application services

SOURCE: IDC, FRAMINGHAM, MASS., 2001

The CEO Perspective

After the Sept. 11 attacks,


haven't changed hiring, layoff or expansion plans
haven't changed corporate travel policies
don't plan to change corporate security policies
expect attacks to delay economic recovery
expect the economy to rebound during the first half of next year

Base: 1,360 CEOs of midsize companies

SOURCE: TEC INTERNATIONAL, SAN DIEGO

Damn the Budget, Full Speed Ahead!

Corporate budgeting dooms planning and poisons organizations, but the fix is easy, says one expert

Corporate budgeting encourages managers to lie and cheat, lowball targets and inflate results. It turns business decisions into elaborate exercises in gaming, creating distrust and ill will and motivating people to act against the best interests of the company. So argues **Michael C. Jensen**, *the Jesse Isidor Straus professor of business administration emeritus at Harvard Business School, in this month's issue of the* Harvard Business Review.

This is the fifth in a series of monthly discussions with authors of articles in the HARVARD BUSINESS REVIEW on topics of interest to IT managers.

Jensen is managing director of the organizational strategy practice at Monitor Group in Cambridge, Mass. He recently did some budget-bashing with Computerworld's *Kathleen Melymuka.*

Q: Why is corporate budgeting "a joke"?
A: Because everybody involved in it understands that it's generally highly counterproductive and a dance that they're obligated to go through every year with relatively bad results.

Q: What is it about the budgeting process that causes this mess?
A: It's individuals' responses to the incentives that cause the mess. Most organizations pay people not on what they do but on what they do relative to what they say they can do.

Q: Can you give a short example of how this plays out?
A: In September of the annual budget cycle, the managers of a Fortune 500 firm were very close to missing the hurdle point at which they get a substantial bonus. They announced to the market that there was going to be a 10% price increase effective Jan. 2. That motivated customers to order early, transferring revenue from next year to this year so [the managers] would have a better chance of making this year's bonus, even though it beggared the future and caused them to incur additional costs.

Later, they announced at the November board meeting that they weren't going to make the hurdle anyway and simultaneously announced the largest quarterly loss in the history of the company. Once you don't make the hurdle, it pays to do the opposite — to bring all your expenses into the current period and push revenues out to the future. This goes on at all levels of the organization, and people know it, and organizations punish people for talking about it and reward people for lying.

Q: I see your point, but this sounds like a finance problem. Why should an IT manager care about budgeting?
A: Virtually every manager in an organization is involved in the process, both in his role up the line and in dealing with people underneath. When people under you in the organization put together budgets, those are important for coordinating complex activities within and across departments. The way it's set up now, the system rewards people for lying. So if you're using those budgets for planning and coordination, you're operating on quicksand.

JENSEN says most organizations pay people on what they do relative to what they say they can do, resulting in a corporate budgeting mess.

Q: How can a company fix the budget mess without doing away with incentives?
A: It's simple. Look at the relationship of pay and performance. We normally have systems that put kinks in that relationship at the points where bonus targets are set — say, at 80% or 120% of the budget target. The way to do away with the problem is to linearize that pay-for-performance relationship. Basically, pay people for what they do, not for what they do relative to [a target]. A simple example of linear pay for performance would be a straight sales commission.

Q: But won't a linear bonus schedule remove the motivational effects of performance targets?

A: It may, but there's some questioo about the effects of stretch targets. One study found that a very large percentage of people will lie if they're close to meeting their goal. And that doesn't even begin to estimate the real costs associated with this stuff. My guess is the costs are so large [that we'd see] a 50% to 100% increase in productivity if we could get rid of them.

Q: If I want to establish a linear bonus program, what do I need to watch out for?
A: Most important, you need to give people a single valued performance measure to pay them on. A counter example is the "balanced scorecard." That offers up to two dozeo measures of performance. A manager has no way to decide what to do within the system to maximize performance when more than one dimension is being measured. That's done all the time in organizations.

Q: Is the bonus potential unlimited in a linear plan?
A: I would argue that it should be, because as soon as it's limited, you've put a kink in the plan and reintroduced all those effects we talked about before. If you penalize people for hard work, you're going to get less of it.

Q: Will organizations resist a linear plan?
A: There is always going to be resistance. Everybody can benefit but people doo't like to change. They've figured out how to operate in the old system and they don't know how they will fare in the new, so they resist. [That will make the job of the HR manager tougher as will higher turnover as a result of low performing employees not getting rewarded as highly. So HR, in general, won't be in favor.] There will also be people who have been free riding, and they're going to be unhappy.

Q: How do I overcome resistance to this change?
A: People have figured out how to operate in the old system and they doo't know how they will fare in the new, so they will resist. You need an effective educational program that helps people understand how the new system works. The CEO and top management have to set the rules and the tone. People have to learn to think differently. ◗

BRIEFS

Report: STP Should Deliver Big Benefits

The billions of dollars that the securities industry is spending to implement straight-through processing (STP) will probably carry on for another five to 10 years, but the financial and operational benefits should be well worth it by reducing overall expenses, according to a new report from Newton, Mass.-based Meridien Research Inc.

STP is a combination of technology infrastructure and business processes that link brokerages, clearinghouses and banks and is aimed at providing a nonstop flow of information from trade execution to settlement. For more on this report, visit *www.meridien-research.com*.

Two-Way Messaging Used With Energy Customers

Kansas City Power & Light Co. (KCP&L) and Stonewater Software Inc. announced last week that they have both implemented Billerica, Mass.-based EnvoyWorldWide Inc.'s two-way messaging platform, EnvoyXpress.

Bill Downey, president of Kansas City, Mo.-based KCP&L's delivery division, said the system has reduced the time it takes the company to notify customers of opportunities to reduce energy consumption from 45 minutes to 10 minutes. It has also saved the utility 80% in operating costs.

Stonewater Software, an Evanston, Ill.-based firm that offers tools to monitor electricity, gas and water consumption, is using EnvoyXpress in cases of emergency, pricing adjustments or when customer use has exceeded a preset demand.

TJX Taps Logistics.com For Procurement System

The TJX Cos., a Framingham, Mass.-based off-price retailer of apparel and home fashions, has selected Burlington, Mass.-based Logistics.com Inc. to provide a strategic transportation procurement system. TJX will deploy Logistics.com's OptiBid Network to procure truckload transportation for inbound delivery of merchandise that it will deliver to its 1,300-plus T.J. Maxx, Marshalls, HomeGoods and A.J. Wright stores across the U.S. TJX officials said they expect that OptiBid will enable the company cut its overall transportation costs.

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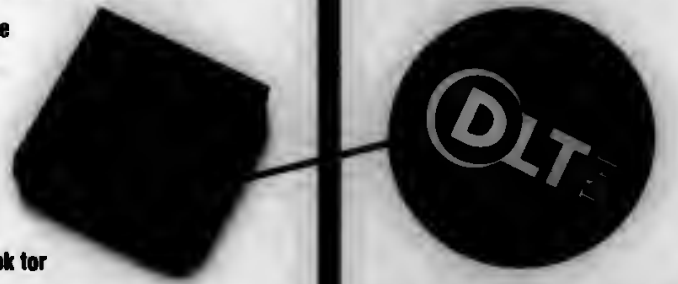

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20
After months of work, you've finally cracked

the consolidotion of your three doto centers into one, when ward comes in that you're buying your largest overseas distributor, adding two mare dato centers to the olready camplex equotian. Okay, now whot?

Ta stay competitive in an environment like this, you have to be oble to react quickly ond decisively in the face af sudden change. It wauld help if your infrastructure were open, resilient and monageable enough to adapt when yau need it to. And the only way that's possible is if the infrastructure is built to wark araund *your* needs, not the ather way oround.

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GIORGIO PALMISANO

SENIOR EXECUTIVES want to hire IT professionals who can discuss technology in "business terms they understand," says Paul Raines of Barclay's Capital.

Hot Skills for a Cold Market

While the hiring demand in IT has plummeted in recent months, you can still get – and keep – a job if you have some key skills. By Deborah Radcliff

ABOUT A YEAR AGO, FRED MEYER Jewelers began a migratioo away from the mainframes at its parent company, Fred Meyer Inc., a $5.5 billion retailer based in Portland Ore. That's when Karen Fung began to see the writing on the wall.

A 14-year Cobol veteran, Fung quickly taught herself C and Visual Basic. Then she signed on to a project to develop a point-of-sale system to run oo oew Windows NT machines. She's now senior programmer in charge of five intranet and Web development projects.

Fung didn't have any Java experience. And she was just learning HTML and Microsoft Corp.'s Internet Informatioo Server at the time she landed the senior programmer's job. It was her soft skills, particularly her ability to pick up new languages and concepts, that got her the job, according to her boss, Mark Funasaki, information systems manager.

"She's since passed up our Web development team and is leading the charge," Funasaki says.

Pickings are slimmer than they have been in recent years, but jobs are out there for IT workers who can add value to a company's bottom line, says Katherine Spencer Lee, executive director of the consulting division at Robert Half International Inc., a job placement firm based in Menlo Park, Calif.

For example, corporate intranets are going forward because they reduce paper and training costs. That's creating a need for people with Web development, XML and media-streaming skills, Lee says.

At some companies, the strategic value of data is driving demand for database and data efficiency managers. And other value-add projects call for skills in networking, security, disaster recovery and wireless LANs, according to hiring managers and job placement experts.

Risky Business

Until recently, network security has been a difficult sell. But the rise in worms and other malicious code attacks and concerns about liability and terrorism changed all that. Security architects and people with risk-assessmeot, public-key infrastructure (PKI) and business continuity skills are in demand, according to Tracy Lenzner, president of Lenzner Group, an IT security placement firm in Las Vegas.

Paul Raines has firsthand knowledge of the strong demand for security professionals; he entertained three offers for executive-level security jobs in January. The head of information risk management at London-based Barclay's Capital, Raines has a résumé that includes such impressive highlights as oversight for the cryptography protecting launch sequences of Minute Man ouclear missiles and executive security roles at the U.S. Postal Service and the Federal Reserve Bank of New York.

But what most impressed hiring managers was Raines' ability to "play ball" with senior executives, he says.

"Executive hirers want someone who can couch security and risk management in the business terms they understand — the cost of control vs. the cost of

Continued on page 46

IT Jobs in High Demand

DATA EFFICIENCY POSITIONS:

■ Database administrators
Skills: SQL/Oracle/DB2 and supporting operating systems
Salary: $71,500–$102,500, based on regioo and experience
SOURCE: ROBERT HALF INTERNATIONAL INC. (RHI), MENLO PARK, CALIF.

■ Database development/ performance tuning specialists
Skills: Database architecture; modeling and administration; deployment; data import/export, backup and recovery; Oracle; Microsoft SQL Server; certifications; database programming; Windows NT; Unix; and Web development.
Salary: $69,500–$102,750, based on region and experience
SOURCE: RHI

■ Data management specialists (people who analyze data flow to identify critical data and waste and develop processes for data cleansing and efficiency)
Skills: Network and systems background, project management, analytical skills and an understanding of data migration and data efficiency tools
Salary: Consultants: $75,000–$125,000 per year; senior project managers: $125,000–$150,000
SOURCE: JOHN BENDE, PARTNER, DATA MANAGEMENT PRACTICE, PRICEWATERHOUSECOOPERS, NEW YORK

NETWORKING POSITIONS:

■ Business continuity and disaster recovery specialists
Skills: Network infrastructure, storage and backup technologies, network redundancy, project management, telecommunications and vertical industry understanding of business methodologies, strategies and business impact
Salary: Consultants: $80,000–$125,000 per year for five to eight years' experience; project managers: $125,000–$175,000 per year for seasoned veterans
SOURCE: DON CHRISTIAN, PARTNER, OPERATIONAL EFFECTIVENESS UNIT, PRICEWATERHOUSECOOPERS

■ Security professionals
Skills: Network security, risk assessment, intrusion-detection and PKI expertise; multiplatform and multitool experience with leading cryptography, firewall and intrusion-detection systems; a network architecture or engineering background; and strong communication and analytical skills
Salary: PKI project managers: $120,000–$140,000; professionals with risk assessment and intrusion-detection skills: $85,000–$120,000
SOURCE: LENZNER GROUP, LAS VEGAS
Network security administrators: $61,250–$84,750, depending on experience and region.
SOURCE: RHI

■ Wireless networking professionals
Skills: Network design, a working knowledge of the wireless networking standard 802.11a, wireless application development, virtual private networks, firewalls and network segmentation, and telecommunications experience
Salary: Network-engineering-level positions: $62,250–$87,000, depending on region and experience; telecommunications managers: $70,000–$90,250
SOURCE: RHI

■ Internet/intranet developers
Skills: Java, HTML, C++, Web servers, XML, SQL, database management systems, Oracle, operating systems and good communication skills
Salary: Developers: $54,000–$75,500; senior developers: $69,500–$94,500
SOURCE: RHI

The Skills Most Lacking In Recent College Graduates

- ✓ Writing and presentation skills
- ✓ Hands-on experience
- ✓ Ability to conceptualize or see the big picture
- ✓ Oral communication skills

The Most Effective Methods for Finding People With Top Skills

- ✓ Employee referrals
- ✓ Internet job sites
- ✓ Recruiting firms and headhunters
- ✓ Local newspapers
- ✓ Local user groups

Source: *Computerworld* survey of IT hiring managers, fall 2001

Hot Skills for a Cold Market

Continued from page 45

not controlling the risk," Raines says. "You must be flexible. It turns hirers off if you have the purist point of view that it's your way or no way."

And communication is important for nonexecutive positions as well, he says. Listing public speaking and writing experience on your résumé helps demonstrate that you can communicate with end users, something employers across the board now demand, Raines explains.

Since his hiring, Raines has staffed his unit with 17 people. He says all of them possessed communication, technical and strategic thinking skills, which are needed to run compliance checks, security awareness training, policy development and risk analysis for Barclay's business units.

Keep It Running

The Sept. 11 terrorist attacks have also incited businesses to place more value on disaster recovery and business continuity planning, says Don Christian, partner in charge of PricewaterhouseCoopers' operational effectiveness team in New York.

Christian is currently looking for project managers who are skilled in communications, infrastructure, telecommunications, storage systems and network redundancy. He says he also needs candidates who possess strong people skills and a deep understanding of vertical markets representative of PricewaterhouseCoopers' client base.

"If you're developing a recovery and continuity plan for trading systems, you need to understand the business process of trading and settlement. And you need to be able to orchestrate people," Christian says.

Demand for security skills is also increasing in the emerging area of wireless networking. Employers want traditional networking design skills, a working knowledge of the wireless networking standard 802.11a and wireless application development experience, says Sandeep Singhal, author of the Wireless Application Protocol and co-founder and chief technology officer at ReefEdge Inc., a wireless LAN security and management vendor in Fort Lee, N.J.

Hiring managers also want security savvy — knowledge of firewalls and network segmentation, virtual private networks and authentication.

Anyone with this combination of skills is a slam-dunk for open wireless positions, says Lee. But this is also an area that's too new for employers to be very picky, she says.

IT managers are instead turning to "teams of skills," and those teams are often outsourced, says Singhal.

The flexibility to bounce between consulting and permanent positions will also help IT workers stay employed. One person with that flexibility is David Vaughan, a Los Angeles-based database architect.

Even before the dot-com consultancy he worked at failed in October, Vaughan had lined up consulting work for an impressive hourly wage. A SQL database specialist, he's studying Oracle so he can land a permanent position at an animation company in the entertainment industry.

The slow economy has taught Vaughan another important soft skill: self-marketing. That starts with his title. "A database architect makes more money than a database developer," he quips. He landed his consulting gigs by asking clients if they'd like him to stick around and finish the work that would be left undone by the failing consultancy he worked for.

Another key to Vaughan's success is that he's in the right place at the right time. Companies now recognize that their data is a valuable strategic resource. But they're struggling with how to harness the data spread around their networks, Lee says.

PricewaterhouseCoopers has an entire consulting unit to serve this business need, called "data management." John Benge, partner in charge of PricewaterhouseCoopers' data management practice, says he needs project managers with a wide breadth of technology and critical-thinking abilities.

Data management team members and managers must know how to seek out data and uncover waste and redundancies across many platforms and systems (particularly legacy, Web servers, databases and enterprise resource planning systems). They must also develop processes to mitigate waste and streamline data availability. Moreover, senior managers must be able to handle "face time" with executives and even close a deal, says Benge.

Web Development

Database work also overlaps intranet and Internet development, which is why Fung and Vaughan are doing so well with their Web development and SQL skills. And now employers are starting to look toward XML development, a skill Fung says she hopes to learn early next year.

"We're seeing more hiring for XML work on both a contractor and a permanent basis," Lee says. "That requires traditional Web development skills — C++, Java, HTML and experience with the XML markup language, which is hard to get at this time."

Guillermo Payet, owner of Ocean Group, an IT consulting firm in Santa Cruz, Calif., spends more time on XML than he does with traditional Web development languages these days. He taught himself XML by studying the standards of the many XML working groups, such as the World Wide Web Consortium (*www.w3c.org*), and vertical industry groups.

Most of his work calls for back-end integration and parsing between a variety of languages and applications, including databases, so Payet needs the full bag of skills to get the jobs done.

Some hiring managers and placement experts expect the overall IT hiring picture to be bleak for the next year. But by expanding your technical skills and your soft skills, you're likely to stay employed during tough times, they say.

The key to success is remembering that businesses are now looking for IT to add value, Lee says. "Even PC technicians can present their value in terms the business can understand. Just show them that you saved the company $17,000 in replacement costs by reconfiguring an expensive printer." ◗

Hot Skills

The following skills are still in demand, despite the slow economy:

Languages
- Java
- C++
- C

Web Development
- HTML
- Visual Basic
- Java
- Active Server Pages

Development Tools
- Oracle Developer 2000
- Visual Studio

Database Management Systems/ Relational Database Management Systems
- Microsoft Access
- Microsoft SQL Server
- Oracle
- DB2

Operating Systems
- Windows NT/2000
- Linux
- Other Unix

Networking
- TCP/IP

Internetworking
- Routing
- Ethernet switching
- 10Base-T switching

LAN
- Windows NT Server
- Ethernet HTTP

Office/E-Mail/Groupware
- Microsoft Exchange

Enterprise Applications
- Oracle

System Software and Support
- Web server administration
- Project management
- Internet application development
- Security
- Help desk

Source: *Computerworld* survey of IT hiring managers, fall 2001.

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SHUT DOWN MOVE
PULL PLUG

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Tracking The

An enterprise incentive management system helps medical supplies maker Welch Allyn track sales and incentive plans more effectively. By Mathew Schwartz

ANY SALES FORCE WORTH ITS salt is driven by incentive plans. The more that salespeople sell, the greater their rewards. Chalk it up to human nature — carrots, when dangled, make us want to chase them.

But in organizations that sell thousands of goods each month, correctly rewarding salespeople can be a tough job. Most companies track incentives using either homegrown software or spreadsheets, say analysts. But those methods are slow, and spreadsheets are error-prone, since so much data is entered manually. That's a problem, since salespeople derive a majority of their income from incentives. Just as incentives can boost morale, poorly administered plans can zap it, fostering turnover.

That situation drove Welch Allyn Inc., a privately held medical equipment manufacturer in Skaneateles Falls, N.Y., to adopt enterprise incentive management (EIM) software. EIM applications can integrate sales data from a company's supply chain with its back-end enterprise software, letting managers more easily and automatically track sales force performance.

In 1998, more than 70% of Welch Allyn's 100 salespeople made their quotas — which represented a good year — and received their compensation. "The problem was, the company didn't make its goals," says Chris Keller, a business analyst at Welch Allyn, whose products range from stethoscopes to blood pressure cuffs. Even though most of its salespeople met their targets, the company had inadvertently set the wrong targets and didn't know until it was too late. Company executives told Keller to fix the problem, which led him to EIM.

Though the EIM software market is still emerging, Boston-based AMR Research Inc. reports that more than a trillion dollars are spent worldwide every year on sales and variable com-

FRANKLIN HAMMOND

pensation plans. That volume is expected to help drive the EIM software market to become a $1.9 billion industry by 2005.

Given the economic downturn, the push is on for corporate managers to see financial data — especially sales — as quickly as possible and on a weekly or at least monthly basis.

"You're going away from the broken ritual of the annual budget," says AMR analyst Bettina Zwerdling. In the past, budget forecasts and analyses were made annually, she says, whereas nowadays, those figures need to be constantly updated.

Regardless of whether a company is using customer relationship management (CRM) software, "one of the things that's missing is having a good system of metrics" for gauging whether the incentive plan is optimally driving revenue, says Sharon Botwinik, an analyst at Forrester Research Inc. in Cambridge, Mass. With the wrong metrics or incentive plan, says Botwinik, "you're essentially just going out of business faster."

Poor incentives not only hit a company's bottom line; they also affect worker retention. In exit interviews, the 5% of Welch Allyn's salespeople who left each year had one thing in common. "In every exit interview, every [salesperson] said a decent sales compensation system was needed, that using Excel spreadsheets to tell your sales force how they're doing is not the best way," says Keller.

Gone Groveling

But for Welch Allyn to automate its incentive program, it needed cleaner data — and more of it. Previously, the company had compensated its salespeople based on the ZIP code of the warehouse that shipped goods to customers. But as the company's key distributors consolidated in the 1990s, just a few were left, with large warehouses that ship nationally, so ZIP codes no longer correlated with sales areas.

As a result, the company was trying to track 150,000 transactions per month using a 14-layer Excel spreadsheet populated by data that salespeople had to mooch from distributors. This also caused salespeople to essentially lose a full day each month as they struggled to compile the information manually and self-report their sales to management.

To respond, Welch Allyn began evaluating EIM software. Its short list included MCC Commission from Trilogy Software Inc. in Austin, Texas; TrueComp from Callidus Software Inc. in San Jose; and Incentive 2.0 from Incentive Systems Inc. in Bedford, Mass.

Trilogy ultimately bowed out because Welch Allyn has annual revenue of less than $500 million, and Callidus was nixed because of its application service provider business model.

Welch Allyn selected Incentive, even though Keller worried that the company carried a higher risk of going under or being acquired because it was small. Incentive 2.0 is priced at $1,000 per user for the first 200 users and runs on Oracle, Windows NT, Sun Solaris or SQL Server for NT.

Welch Allyn rewrote its sales incentive plans with the help of Incentive partner and integrator PCS Inc. in Boston. The company also began trying to get its distributors to share their sales data and sent salespeople begging if they wouldn't. "We got on our knees and pleaded," says Keller. The groveling worked: Welch Allyn can now trace nearly 85% of all revenue to the appropriate salespeople.

Reviving the Patient

Welch Allyn's software integration began last November and went live in April, in time for the sales figures from the January-to-March quarter to be run through the system.

The company spent $350,000 on the implementation and software license. John Tierny, national sales manager for hospital distribution business at Welch Allyn, predicts solid returns. "It will easily save us north of $550,000 to $1 million per year based on time savings alone, once we have it up and running," he says.

He also forecasts an 80% reduction in payment errors and adjustments, $100,000 saved per year from lower sales rep turnover and several hundred hours of recovered IT time, since a lot of data used in the Excel spreadsheets previously had to be manually imported from an IBM AS/400 system.

"Historically, we've never been able to do the sales credit down to the level of user accountability," says Tierny.

The new software has changed all that. Now Welch Allyn feeds its Incentive data into Crystal Reports, which shoots an e-mail alert to senior management. In turn, managers can tweak individual bonuses and use the software to track how each salesperson is faring in hitting his numbers. Salespeople are also sent e-mail attachments with several reports detailing how they did the previous month and letting them drill down further into what they've sold and what it's worth.

Since the software went live in April, Welch Allyn is still tweaking reports and working out occasional snags. For instance, for a three- to four-month period, it took more than a day for the software to process a single month's sales data, says Keller. Incentive eventually traced the problem to a bug in the software code, which it fixed. In the interim, the vendor ran Welch Allyn's raw sales data itself.

In the future, Tierny wants to put the sales data into a data warehouse and marry it with purchased demographic data to better hone the company's marketing and sales operations. In addition, Keller would like to install CRM software to make it easier to track large customers and identify their customer service needs.

Rob Desisto, an analyst at Stamford, Conn.-based Gartner Inc., says that EIM/CRM integration, which is expected to become commonplace in the next few years, would allow a salesperson to look at the sales force automation software and "not just see 10 sales opportunities, but the sales opportunities and potential commissions for each opportunity as well."

And with commissions better tied to products that drive maximum revenue, companies will have come closer to creating the perfect carrot. Already, "it's great for us," says Keller. "For one, the sales force trusts us. And we have the beginning of a data warehouse where we can begin to make more strategic business decisions."

Schwartz is a freelance writer in Arlington, Mass. Contact him at Mat@PenandCamera.com.

Welch Allyn's EIM Implementation

GOALS	STATUS REPORT
1. Implement automated incentive management software to replace manual processes and a 14-layer Excel spreadsheet and to track sales monthly, not quarterly	1. Software from Incentive was rolled out in April; it provides a more accurate, monthly look at sales and better reporting.
2. Cajole 700 suppliers into sharing sales data to save salespeople time, reduce reporting errors and track individual salespeople's performance.	2. Eighty-five percent of all revenue can now be tracked to the appropriate salesperson, and the company expects an 80% reduction in payment errors and adjustments.
3. Improve sales force retention (from the current turnover rate of 5%) through better incentive reporting and reduce IT's burden in managing it.	3. It's too soon to report a retention change, but Welch Allyn forecasts annual savings of $550,000 to $1 million from salespeople no longer doing self-reporting.

Quick Link Links to companies that specialize in compensation design can be found on our Web site: www.computerworld.com/q?24554

Carrot Chase

"Dear Career Adviser:

I was laid off more than three months ago. I'm a business systems analyst/consultant with three years' experience working at a major consulting firm after college. My skills are mostly in business processes and database administration (Access), and I'm working on obtaining Oracle Certified Professional (OCP) credentials to solidify my background in databases. Will passing a test be enough to upgrade my work life, or should I just take whatever comes along, given the market?

— WAIT OR WALK?

Dear Or:

Obtaining OCP status involves passing five exams in SQL and PL/SQL, database administration, backup and recovery, performance tuning and network administration. Realistically, even with the certification, there are already many qualified database people available in the market, says Andrew Pettit, vice president of staffing at Brentwood, Tenn.-based Majestic Systems Integration Co. Your learning curve might be easier moving from Access to SQL Server and then to Oracle.

Should you decide to pursue an Oracle job, prepare to give in-depth answers to interview questions regarding your general knowledge about the differences between Oracle and Access as well as technical questions dealing with triggers and stored procedures.

You might also be asked to create a table of objects, discuss how to give a user the right to create tables, or answer questions involving Oracle forms, reports or Case tools.

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at www.computerworld.com/career_adviser.

Dear Career Adviser:

I'm a software engineer in a security company earning $80,000 per year. I have six years of expertise in C++, Visual C++, Win32, WinSock, NT services, multithreaded programming, HTTP and HTML. Am I underpaid?

— SECURITY SYSTEMS

Dear Security:

Yoo are in a hot field. But Visual C++, Win32 and HTML are the commodities, not the essence, of really being a security guru, says Naftali Bennett, president of Cyota, a credit card security company in New York.

Along with those technical skills, you'll need to understand the bigger picture, the strategy of security and how people think. Then you'll need to come up with simple, realistic solutions that counteract both hacking *and* human error, such as a forgetful employee leaving a password written on a Post-it stuck to his computer.

Then, there's the issue of the current economic environment vs. the strength of this particular field. Will career opportunities in security remain strong in the face of rising unemployment and the threat of a recession? It's simply too soon to know, Bennett cautions.

Therefore, in this market, given your experience, consider your $80,000 salary more than adequate. ◗

WORKSTYLES

IT on the Front Lines In the War on Terror

IT organizational structure: "About 80% of the staff are distributed — each center, institute and office within the CDC has its own IT group. About 80 to 100 people are in centralized IT. [They are] responsible for our core infrastructure services: the WAN, our telecom network, the Internet infrastructure, our Web presence, the e-mail infrastructure and our mainframe computing capability, etc."

Mission-critical systems: "The Public Health Surveillance System, a set of homegrown, CDC-engineered applications to support disease detection and measurement of the nation's health status.

"As an agency, our job is to identify the health of the nation and prevent adverse health events by assessing risks and outbreaks and intervening."

Major projects: "We're working on a next-generation, Internet-based surveillance system for disease reporting. . . . The new system, [the National Electronic Disease Surveillance System], will be a comprehensive, integrated system. It will simplify IT because we won't be supporting so many separate systems."

What kind of pressure is the anthrax threat putting on IT? "Clearly, the importance of maintaining 24/7 operations is one outcome of the current situation. . . . The CDC has a 50-year history of operating in this kind of mode — not this intense, with a bioterrorism threat on our own soil, but of responding to health emergencies. . . . But clearly, this is different, and everyone senses the difference."

IT training: "We have a CDC University, and there's an information resources management curriculum. We revise it every year by consulting with the CTOs across the agency so that it's in line with emerging trends and new technologies."

Employee reviews: Midyear and year-end performance evaluations.

Compensation and bonuses: "Since we're part of the federal government, we have civil service compensation rules. But we also have Special Act Awards, usually associated with projects. And you can get a bonus in your year-end review."

Workday: "We have a flextime environment, so people come as early as 6 a.m., and normally they put in an eight-hour day. While we've always had shifts to maintain 24/7 operations, the number of people on the shifts has expanded with the anthrax situation."

The last word: "The thing that sets our agency apart is the humanitarian mission to improve the quality of life for people in the United States and around the world, plus the strong passion that our people have for that mission. People are extremely dedicated, and it's a joy to work in a place where people care about the mission, their colleagues and the outcomes of their work."

– Leslie Jaye Goff (lgoff@ix.netcom.com)

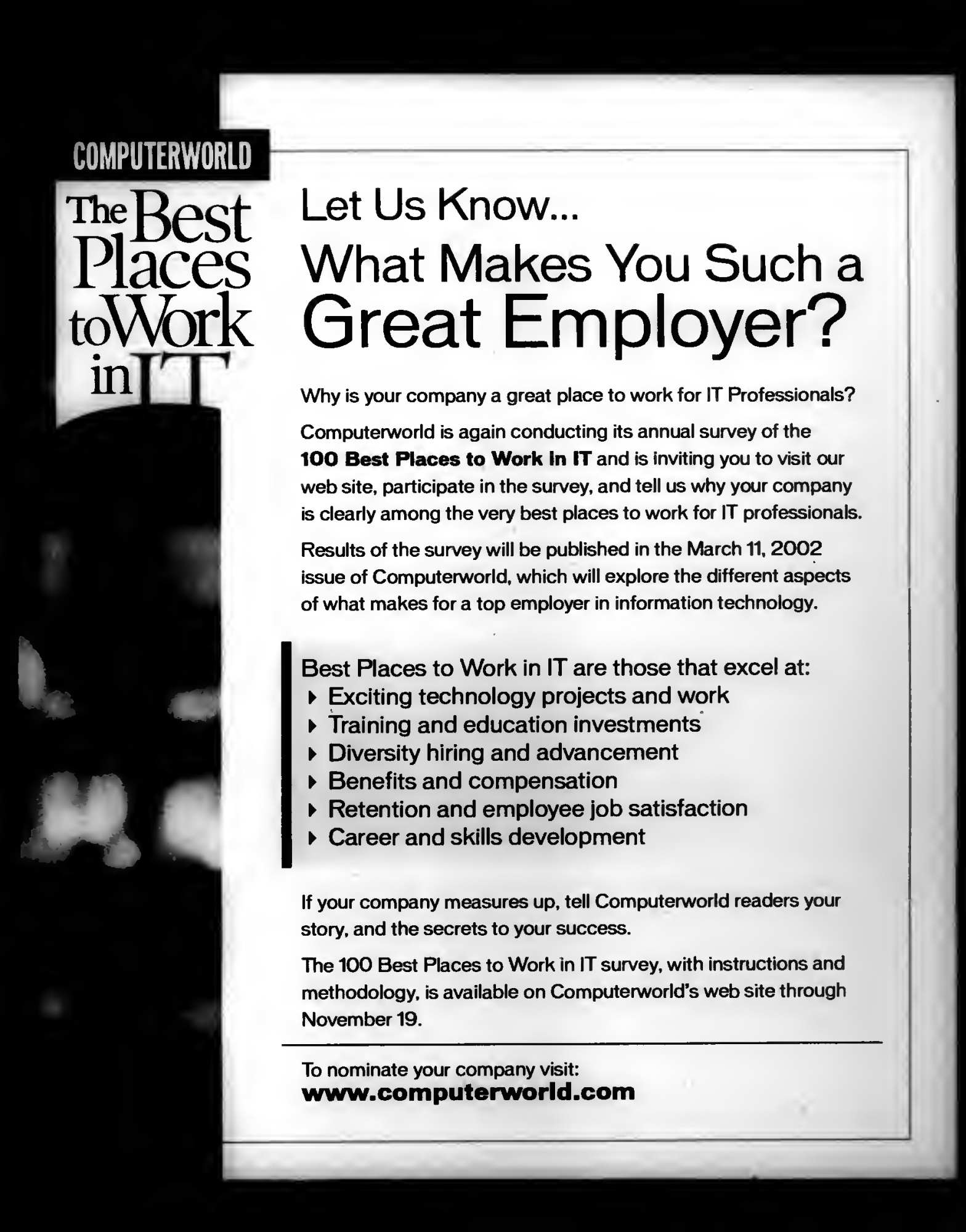
Centers for Disease Control and Prevention

Interviewee: Jim Seligman, CIO

Main location: Atlanta

Number of IT employees: 450, plus more than 500 contractors

Number of employees (end users): "We support upwards of 10,000 users. We have 8,000 employees [and] 2,000 visiting scientists, students and contractors. We have systems that are deployed nationwide to hospitals and health departments."



Let Us Know...

What Makes You Such a Great Employer?

Why is your company a great place to work for IT Professionals?

Computerworld is again conducting its annual survey of the **100 Best Places to Work In IT** and is inviting you to visit our web site, participate in the survey, and tell us why your company is clearly among the very best places to work for IT professionals.

Results of the survey will be published in the March 11, 2002 issue of Computerworld, which will explore the different aspects of what makes for a top employer in information technology.

Best Places to Work in IT are those that excel at:

- Exciting technology projects and work
- Training and education investments
- Diversity hiring and advancement
- Benefits and compensation
- Retention and employee job satisfaction
- Career and skills development

If your company measures up, tell Computerworld readers your story, and the secrets to your success.

The 100 Best Places to Work in IT survey, with instructions and methodology, is available on Computerworld's web site through November 19.

To nominate your company visit:
www.computerworld.com

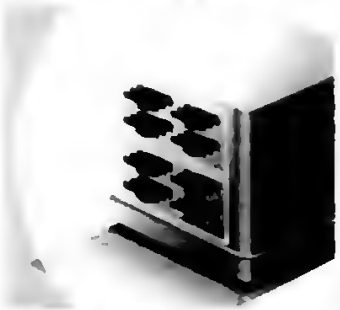
100% of your disk capacity is now usable for storage. We call this revolutionary idea getting what you pay for.

STORAGETEK

THIS WEEK

NOVELL'S GAMBLE

Novell has built a strategy aroud an array of directory-enabled applications and services and is targeting e-commerce. Does the technology live up to the rhetoric? PAGE 54



WHERE WINTEL MAKES SENSE

Corporations weigh the risks and beoefits of moving to high-end Wintel hardware like Unisys' ES7000 — replacing many small servers with larger multiprocessor machines that can run Windows Datacenter for heavy-duty computing tasks. PAGE 58

QUICKSTUDY

Reverse-engineering is the process of taking a piece of software or hardware, analyzing its functions and information flow, and then translating those processes into a human-readable format. Find out more in this week's primer. PAGE 62

SECURITY JOURNAL

With security manager Vince Tuesday away, his team whips into actioo when it encounters suspicious port scans and connectioo attempts. But the culprit turns out not to be some oew virus — just applications behaving badly. PAGE 64

NICHOLAS PETRELEY

Side-by-Side Hypocrisy

SOME OF YOU MAY KNOW of humorist Jean Shepherd, the late author and narrator of the movie classic *A Christmas Story*, which was derived from his book *In God We Trust, All Others Pay Cash*. Like many others who grew up in New Jersey in the 1960s, I listened to Shepherd spin his fictional yarns about his childhood

every oight oo radio statioo WOR. I'll always regret having been too timid to jump in and ask him for a chat when I stumbled on a conversatioo he was having oo the 40-meter band. I'm not certain, but I think it was that cooversation in which I heard Shepherd poke fun at some gubernatorial candidate who promised to get the mafia out of New Jersey.

"Get the mafia out of New Jersey? The mafia *is* New Jersey!" Shepherd quipped.

That quote hauoted me all week like an apparitioo floating between me and my computer monitor, as if to prevent me from finishing this column until I used it. And I finally figured out why.

With this new version of Windows, Microsoft has proposed a viable-sounding solutioo to DLL hell. Contrary to popular belief, DLL hell iso't the fact that you can hreak one Windows application by installing another. That's DLL limbo. You doo't cross over into hell until you try to get both applications working at the same time.

Microsoft's get-out-of-hell-free card is called Side-by-Side Assemblies. The proposed solutioo isn't so much a technology as it is a set of guidelines on how developers should use the Wiodows registry, header files and an XML-formatted manifest in order to run two or more versions of a Dynamic Link Library at the same time without them tripping over one another. Io some cases, developers must create even more registry entries than usual, and in other cases, developers must move settings they used to store in the registry to XML files. Last week, I illustrated how Microsoft fudged the registry in dangerous ways when it added multiuser features to Windows XP. In this case, Microsoft just abandooed the registry in places where it wouldn't work.

If you want to see how oeedlessly complex these DLL guidelines are, contrast them with how Unix developers avoid ".so" hell (DLLs are called Shared Objects in Unix): They change the name of the library file. That's it. If an application needs Version 5.2 of the "ncurses" library, it loads a file called libncurses.so.5.2. The applications that use Versioo 4.2 woo't break, because they can still load the file libocurses.so.4.2. No installation programs will overwrite the old file with the new one, because the file names are differeot.

There are other easy ways to avoid DLL hell. You can statically link applications to libraries or install libraries in the applicatioo's directory, and developers can always use and respect the internal version numbers in DLLs.

So if the solution is so trivial, why is Microsoft dragging the registry and XML files into the picture? It unwittingly answered that questioo in some leaked documents from 1998. Those documents address the threat of Linux and are known as the "Halloween files" because they were leaked on Halloween.

The documents reveal that Microsoft deliberately adds arbitrary layers of complexity to make it difficult to deliver Windows features on non-Windows platforms. That's what Side-by-Side Assemblies is all about. Microsoft depends on obscurity and complexity to survive.

What customers should be asking is, if the solution really is so trivial, why have their help desks been struggling with DLL hell for years?

That's what Microsoft doeso't want you to ask. Because, with very few exceptions, you can trace almost every DLL conflict down to the core set of Windows system libraries, such as COMCTL32.DLL or MSVCRT.DLL. Almost all Windows applications use them. But Microsoft has exclusive control over these files. Independent software vendors that license the libraries sometimes make the mistake of overwriting files at installation time, but Microsoft routinely overwrites them wheo you install its applications. We've come to expect that practice as a given.

NICHOLAS PETRELEY is a computer consultant and author in Hayward, Calif. He can be reached at [redacted]

In short, the answer is that DLL hell exists only because Microsoft originated and perpetuated it. So it's ludicrous for Microsoft to boast that it has devised a way for developers to get the DLL hell out of Windows. DLL hell *is* Windows.

INSIDE NOVELL'S ONE NET STRATEGY

With NetWare's market share dropping, Novell bets big on its 'one Net' strategy. Is it enough to bring users back? By Gary H. Anthes

IMAGINE SOFTWARE that gives users a single view into a seamless network, wherever they are and wherever their browsers take them. It's enabled by a directory, which becomes a sort of uber operating system. But users don't care about operating systems anymore, or directories either — all they care about is finding answers to their business problems.

A bold vision, indeed, but Novell Inc. is betting the company on it.

Novell introduced its NetWare operating system in 1983. By the early 1990s, it had nearly 70% of the network operating system market. But since then, pounded by competition from Windows, Unix and Linux, Novell's sales and market share have shrunk.

Now Novell is responding on three broad fronts. First, it has shifted development and marketing efforts from NetWare to products for collaboration, security, directory services and network management that have higher growth potential, particularly for e-business.

Second, Novell hopes to evolve from a company that sells products to mid-level technical people to one that offers packages of products and consulting services to senior IT and business managers. That effort got a big boost in July when Novell bought Cambridge Technology Partners Inc. and in one fell swoop boosted its consulting staff from 350 to almost 3,000.

Finally, Novell has adopted a strategy of "if you can't lick 'em, sidestep 'em" to head off the threat from Microsoft Corp. The vendor is evolving its products to open standards, such as XML, and to independence from its flagship network operating system product, NetWare. Novell claims that its One Net strategy, built on its NDS eDirectory product, will give users a single view and point of access to resources, whether they're on public or private networks, intranets, extranets or the Internet.

Despite users' praise for these changes, Novell continues to lose market share. As Windows application servers began to creep in, many organizations decided to standardize on Microsoft's network operating system. Now Windows 2000's Active Directory, tightly integrated with Windows and other Microsoft applications, is commoditizing directory services — another area in which Novell has excelled.

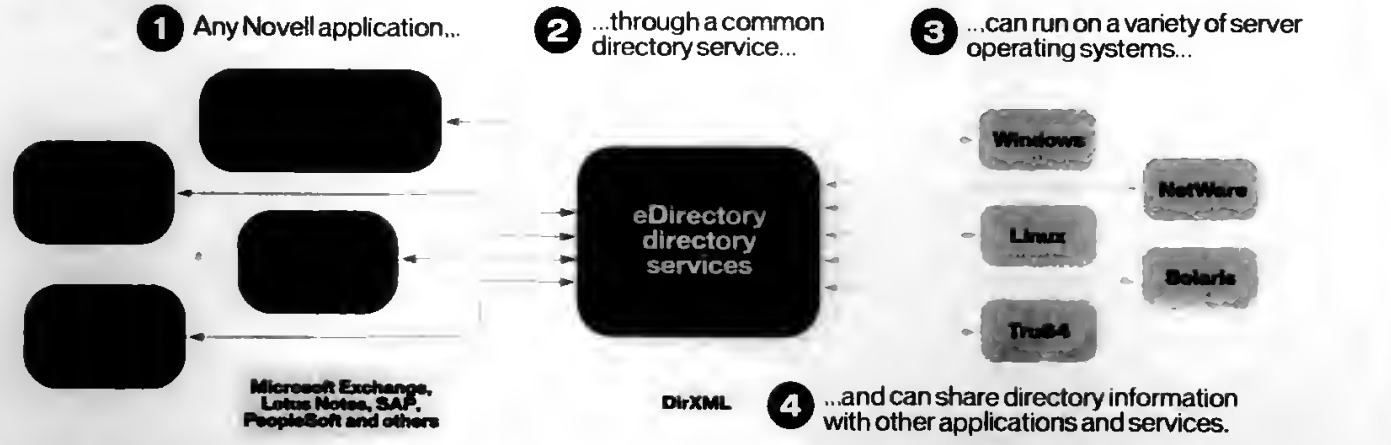
NOVELL'S BIG BET

NetWare 6, introduced last month, illustrates Novell's new direction. It supports eDirectory, Novell's directory system, and it adds end-user services such as iPrint, which lets end users with Web browsers find and use printers, and iFolder, which lets them access and synchronize files stored on file servers running a range of operating systems.

"We used to appeal to the technical people," says Jim Tanner, Novell's director of NetWare product manage-

Continued on page 56

HOW IT WORKS


1 Any Novell application...
2 ...through a common directory service...
3 ...can run on a variety of server operating systems...
eDirectory directory services
Windows
NetWare
Linux
Solaris
Tru64
Microsoft Exchange, Lotus Notes, SAP, PeopleSoft and others
DirXML
4 ...and can share directory information with other applications and services.

NDS eDirectory is the key to Novell's One Net technology strategy. Decoupled from NetWare, eDirectory now runs on a range of servers. Novell is redesigning its applications and services to run on any eDirectory-enabled server and provides synchronization to directory information in other applications through its DirXML metadirectory software. Novell's vision is to enable users to have a single point of access to all applications and services through a common directory system layer.

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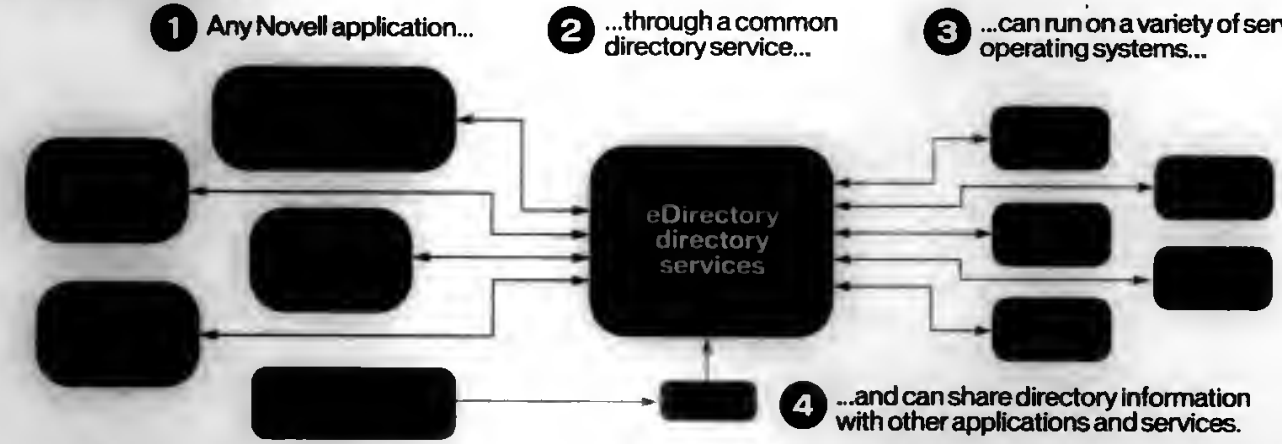
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GROWTH.

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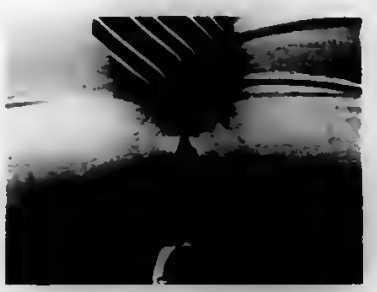

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Continued from page 54

ment. "With 6, it now becomes a set of services."

NetWare 6 also eliminates the requirement for historically trouble-prone NetWare client software, relying instead on the Windows network client. And it makes upgrades easier, Tanner says. "A NetWare service can be made available to any user without the administrator having to touch the client," he says. "For example, you could deploy a single NetWare 6 server and then broadcast iPrint to 10,000 users."

What's more important is that Novell's products — from ZENworks to GroupWise — are being decoupled from NetWare. They now only require eDirectory, which runs on a variety of network operating systems, from NT to Solaris. Novell is betting that by tying its own applications to eDirectory and then providing connections to other directories through its DirXML metadirectory service, users will embrace it as the glue that connects all applications and directories, both inside and outside the enterprise.

Current Novell users and analysts generally applaud these developments. Aidan Garcia, a network services manager at Eastern Bank in Lynn, Mass., says, "We've liked what we've seen from Novell, even for integrating our Microsoft servers into our Novell Directory Services environment. Our external authentication is all done through Novell. So there's one set of user accounts for everyone, not one for Unix, one for NT, one for the virtual private network and one for the Web."

Novell also has a distinct quality advantage over Microsoft, says Dan Kusnetzky, an analyst at IDC in Framingham, Mass. "Microsoft is facing problems of scalability, security and management that Novell solved years ago. And Novell has better directory services, better management tools and better user-provisioning tools," he says.

THE TECHNOLOGY BEHIND ONE NET

Novell has many products that fit into its One Net strategy. Here are a few of the core elements:

NetWare 6: The new version does away with the NetWare client and introduces iPrint and iFolder, which are browser-based services that help users find and use printers and access documents regardless of their location.

NDS eDirectory: Novell Directory Services, relaunched as eDirectory two years ago, moves the company's 8-year-old directory service to network operating system independence, with native support for Windows 2000, NT, Solaris, Linux and NetWare. EDirectory has become the base on which all other Novell products rest.

DirXML: Introduced last year, Novell's XML-based data sharing and synchronization metadirectory service continuously updates user profiles and other information between eDirectory and other enterprise directories. Unless a target directory stores its data in XML, special "connector" interface software is required. So far, Novell offers connectors for Microsoft Exchange, Lotus Notes, PeopleSoft and SAP software.

GroupWise 6: Introduced in April, this version extends Novell's e-mail and collaboration product to support wireless devices and runs on any server running eDirectory.

ZENworks: Novell's popular desktop and server management tools, which leverage eDirectory, are being revamped. The next release of ZENworks for Servers will no longer require NetWare, and ZENworks for Desktops will eliminate the need for Novell client software.

iChain: Novell's user authentication and authorization software is designed to work with eDirectory and provide single sign-on.

And Novell has picked the right strategy to move it beyond the realm of legacy operating systems, Kusnetzky says. "A lot of big organizations are beginning to see Novell as the glue that will link Windows clients to Windows servers — and to servers like Solaris," he explains.

Rockford Corp. in Tempe, Ariz., has a mixture of NetWare, Windows and Unix servers and relies on eDirectory and ZENworks to tie it all together. The manufacturing company is extending the One Net concept beyond its walls. "Dealers want information from our LAN, so if I can give them — from a single point of administration — access to NT servers, Oracle [Unix] resources or whatever, we have the ability to get them in here with one user name and password," says Chris Duffy, communications manager at Rockford. "Internet, extranets, intranet all stitched together. That's our vision."

THE 90% SOLUTION

Despite the praise for Novell's direction, many users are still quietly defecting to Microsoft. According to a recent survey by Stamford, Conn.-based Gartner Inc., 36% of NetWare users said they were converting or had converted their NetWare servers to Windows 2000 or NT.

The Andersons Inc., a $1 billion agricultural products company in Maumee, Ohio, has been a satisfied NetWare user since 1988 but is nevertheless migrating to Windows NT. IT architect Judy Zilka says the company loves the reliability and scalability of Novell products and was initially skeptical of NT. But then it brought NT servers to host NT applications, including Lotus Notes.

"The NT servers were good, and they were reliable," Zilka says. So she plans to simplify the infrastructure by phasing out NetWare, even though she considers it technically superior to NT in many ways. "It's the Microsoft momentum," Zilka explains. "It's Microsoft dollars, their R&D, their marketing machine. If it works and it's reliable and you get 90%, maybe 90% is OK."

Should Microsoft's momentum worry Novell users? "I'd be comfortable if I were a Novell customer," says Gartner analyst Neil McDonald. "Novell is not going away. And as for these migrations from NetWare to Windows, it's very difficult to find the cost justification or the technological justification."

But persuading new users to bring in eDirectory, the platform on which all Novell applications are now based, could be difficult, says Rick Villars, an analyst at IDC. "If you think of eDirectory as an operating system, it's a challenge. If someone is committed to Active Directory, then they are going to think of this as an [operating system migration]," he says.

"So the key for Novell is to make the decision on eDirectory to be more like the decision companies make on databases, where they are looking for a solution to a business problem," Villars says. "That could be a better way to integrate the human resource systems from merged companies, a better way to manage information you are providing partners through a portal, or a better way to integrate security controls for different ERP applications." That, he says, is the approach Novell is now taking. ▶

Quick Link

- For a *Computerworld* interview with Novell CTO Carl Ledbetter, visit: www.computerworld.com/q?24438
- For resources on Novell products and strategies, go to: www.computerworld.com/q?24439

CHANGING FORTUNES

1979: Novell Data Systems launched as a maker of computers and disk operating systems.

1983: Company changes name to Novell, welcomes CEO Ray Noorda, introduces NetWare file server software.

1987: Novell acquires Santa Clara Systems, a maker of microcomputer workstations.

1989: Company acquires Excelan, a maker of networking software and equipment.

Early 1990s: NetWare's market share reaches nearly 70%.

1993: Novell Directory Services (NDS) introduced.

1992: Buys AT&T's Unix operating system.

1994: Acquires WordPerfect and Borland's Quattro Pro spreadsheet software. Noorda retires and is succeeded by Hewlett-Packard executive Robert Frankenberg, who later sells WordPerfect to Corel at a loss of more than $700 million.

GroupWise is introduced.

1995: Sales peak at $2 billion.

1996: Frankenberg leaves following flat sales and is replaced by John Young.

1997: Young departs; Eric Schmidt takes the helm, repositions Novell products for the Internet, lays off 1,000 workers (18% of the workforce).

Sales drop to $1 billion.

1998: Novell shifts focus to directory services, introduces NetWare 5 and NDS designed for Internet and intranet applications, and ZENWorks.

1999: Novell decouples NDS from NetWare with its launch of NDS eDirectory.

2000: Novell introduces One Net vision and Net services software strategy, cuts workforce by 13%, launches DirXML and iChain.

2001: Novell acquires Cambridge Technology Partners. Cambridge CEO Jack Messman becomes president and CEO of Novell; Schmidt remains chairman. Combined company aims to sell to senior management and emphasize e-commerce.

SOURCES: NOVELL, COMPUTERWORLD, IDC

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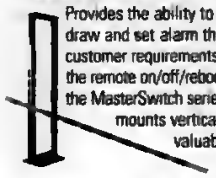

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MOVING TO WINTEL BIG IRON

Early adopters say 32-processor Wintel machines allow them to consolidate server farms and scale up computing power inside a single box. By Lee Copeland

LAST OCTOBER, GARY CLARK looked into La-Z Boy Inc.'s data center and pondered two pressing concerns: rack upon rack of network servers that were multiplying like rabbits and the mounting costs of maintaining that rapidly growing server population.

The furniture maker's data centers currently house about 200 primarily two- and four-processor servers from Compaq Computer Corp. Clark, director of IT services at La-Z Boy, estimates that his server farm population was growing at an unruly rate of four to 10 servers per month.

But that was last year. Today, the $2.3 billion manufacturer of kickback recliners is culling its herd of servers through consolidation. Instead of running Microsoft Corp.'s SQL Server 2000 applications on individual Compaq ProLiant 1600 and ML 370 servers, the furniture company is replacing those machines with a single high-end workhorse from Unisys Corp., Clark says.

"I'm trying to manage more [computing needs] with the same number of resources," Clark says. "As opposed to continually adding servers, I can manage the same box with fewer people. It's also allowing me to put more data in one place and manage one box as opposed to 12 or 16 boxes."

Like a handful of other early adopters, La-Z Boy is making the shift to high-end machines that are optimized for Microsoft's Windows 2000 operating systems and built with Intel Corp.'s microprocessors, and thus is testing whether the Wintel architecture deserves a place in the enterprise.

The concept is simple: Pack the box with up to 32 CPUs to give it greater processing power. Pair that processing power with Microsoft's heavy-duty server operating systems, such as Windows 2000 Advanced Server and Datacenter Server, and the results amount to a back-office contender to compete with Unix-based big iron. This can be especially appealing for companies with Microsoft-centric computing environments.

"Some IT managers are keen on larger, scalable systems for Windows because they require large, centralized databases across a distributed environment," says Thomas Manter, an analyst at Aberdeen Group Inc., a Boston-based market research firm. "There is also a lot of consolidation occurring, because IT managers are keen on bringing administrative and maintenance costs under control."

La-Z Boy's newest workhorse is the ES7000 server from Blue Bell, Pa.-based Unisys. The machine supports up to 32 processors, but Monroe, Mich.-based La-Z Boy is using an eight-processor configuration that's divided into two four-way partitions. Clark expects the server consolidation project to cut maintenance costs significantly by reducing the number of machines within the data center.

Dollars and Sense

Citing a need to consolidate its two- and four-way processor servers from Unisys and Hewlett-Packard Co., Commonwealth Financial Network also made the ES7000 the centerpiece of its data center, says Ed Bell, CIO at the Waltham, Mass.-based investment brokerage firm. Besides the benefits gained by whittling down the number of servers Commonwealth must manage, Bell says, the promise of scalability was the motivating factor in shifting to the Unisys box.

"I didn't do it just for economic reasons," he says. "I did it for capacity."

The ability to partition processors makes the system scalable, Bell adds. With partitioning, one machine can concurrently execute separate applications on different sets of CPUs. Performance also gets a boost because these systems offer higher I/O throughput.

"It's like having to water the entire lawn with a bunch of sprinklers and one small hose," Bell says of the slower I/O capability of servers with limited CPU power. "We're crunching a lot of information, so my lawn just got really big. It's like having 10 times the hose capacity opened up."

The ES7000 box supports 48 I/O channels per domain partition at Commonwealth. The system manages a database of several hundred accounts within the mission-critical data warehousing application — on the same machine, Bell reports.

Getting more out of a single box is also critical at La-Z Boy. Clark anticipates expanding the processor capacity of the ES7000 by adding additional Intel 900-MHz processors, instead of purchasing

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5. You need high I/O throughput.
6. You maintain centralized databases in a distributed environment.
7. You have the time and resources to fully test a new server configuration before moving production applications to it.

new commodity servers. "We're a manufacturing company, and this was a more aggressive approach than we've taken [in the past]," he says. "We expect to expand to 12 [additional] processor partitions in the next three to four months."

And while the smaller, less-expensive Compaq machines will remain the "workhorse" server of choice in La-Z Boy's data centers, Clark says the ES7000 offers an alternative that provides greater horsepower combined with lower support and maintenance costs.

Test, Test, Test

But while there are performance and consolidation benefits to the Wintel-based Unisys machines, making the shift isn't easy.

"Windows is more robust, but there are lingering doubts about scalability and reliability," says Rich Partridge, vice president of enterprise servers at D.H. Brown Associates Inc., a market research firm in Port Chester, NY.

Many users have a "not-so-fond remembrance of the blue screens of death, so Microsoft has an uphill battle to prove that it has a reliable operating environment," Partridge says.

"The market isn't pounding on the doors to move quickly to this type of solution," says Aberdeen's Manter. "Microsoft is still overcoming the history of NT's [lack of] reliability. Windows 2000 has by far overcome that problem, but users are cautious about moving to Windows from a Unix or mainframe operation."

Manter recommends that IT organizations invest in thorough quality assurance and pilot testing before migrating Windows-based applications into the back office or to new high-end machines from Unisys or other vendors.

Clark's systems support team began by conducting 90 days' worth of quality assurance testing. The migration of 12 Compaq servers onto one ES7000 server began in May but won't be completed until the end of this month.

"Right now, we're not running anything mission-critical to our core business [on the ES7000]. There are not any manufacturing applications on that box today," Clark laments. Instead, the Wintel-based machine handles La-Z Boy's systems management and asset management SQL databases, some customer support data and help desk management applications.

Still, Clark says, the move to bigger iron has been worth it because server partitioning on the ES7000 allows La-Z Boy to run several separate databases on the partitions without having to merge those databases. He says he also expects that the ES7000, which costs less than $500,000, will continue functioning in the data center for about eight years, instead of the typical three-year run of most lower-end network servers.

Unlike Clark, Bell says the customer management and data warehousing applications running on his ES7000 servers are absolutely mission-critical.

"It's how our 1,000 financial advisers look at client [histories] and establish financial trends," Bell says.

Big Wintel Server Provides Healthy Services

Secure server partitioning made the difference for one user.

Health eConnex (HeC), a transaction-processing health care company in Park Ridge, Ill., replaced 10 Compaq ProLiant DL360 servers with one ES7000 machine last January, says Ray Peddin, HeC's executive vice president.

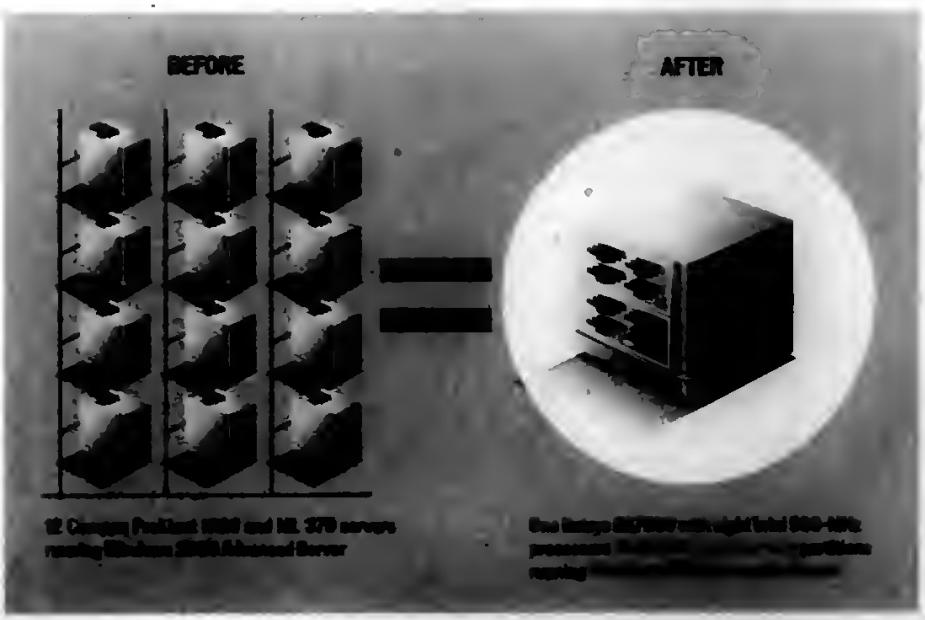
Peddin says partitioning enabled the ES7000 to support more concurrent users and applications, as well as provide backup processing for mission-critical applications. HeC performs electronic medical record management, claims processing and practice management for 40,000 health care clients, so the importance of secure partitioning can't be overstated.

"It gives us the capability to scale within a single architecture, as opposed to having a whole room full of servers," says Peddin. "Client separation is critically important. Partitions are primarily for that functionality and fail-over. We cannot be down – period."

–Lee Copeland

What La-Z Boy Did

Faced with a growing number of small Windows-based servers, the furniture maker's IT department opted to replace them with a single, large multiprocessor server that could scale up significantly in the future without adding to the growing maintenance burden.



new commodity servers. "We're a manufacturing company, and this was a more aggressive approach than we've taken [in the past]," he says. "We expect to expand to 12 [additional] processor partitions in the next three to four months."

And while the smaller, less-expensive Compaq machines will remain the "workhorse" server of choice in La-Z Boy's data centers, Clark says the ES7000 offers an alternative that provides greater horsepower combined with lower support and maintenance costs.

Test, Test, Test

But while there are performance and consolidation benefits to the Wintel-based Unisys machines, making the shift isn't easy.

"Windows is more robust, but there are lingering doubts about scalability and reliability," says Rich Partridge, vice president of enterprise servers at D.H. Brown Associates Inc., a market research firm in Port Chester, N.Y.

Many users have a "not-so-fond remembrance of the blue screens of death, so Microsoft has an uphill battle to prove that it has a reliable operating environment," Partridge says.

"The market isn't pounding on the doors to move quickly to this type of solution," says Aberdeen's Manter. "Microsoft is still overcoming the history of NT's [lack of] reliability. Windows 2000 has by far overcome that problem, but users are cautious about moving to Windows from a Unix or mainframe operation."

Manter recommends that IT organizations invest in thorough quality assurance and pilot testing before migrating Windows-based applications into the back office or to new high-end machines from Unisys or other vendors.

Clark's systems support team began by conducting 90 days' worth of quality assurance testing. The migration of 12 Compaq servers onto one ES7000 server began in May but won't be completed until the end of this month.

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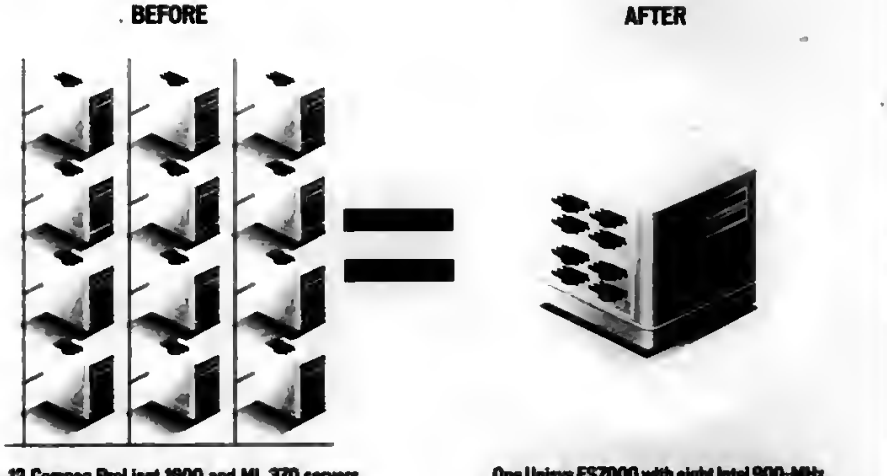
BEFORE
AFTER
12 Compaq ProLiant 1600 and ML 370 servers running Windows 2000 Advanced Server
One Unisys ES7000 with eight Intel 900-MHz processors divided into two four-way partitions running Windows 2000 Datacenter Server

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Laptops to Live With

Notebook computers keep getting smaller, faster, better and cheaper. And they're doing it in very different ways.

By Russell Kay

IT'S HAPPENED again. Two years ago, I reviewed a small notebook, the Gateway FireAnt [Technology, April 19, 1999] and fell in love with it. Ever since, I've been looking for another notebook that combines the FireAnt's basic efficiency with more modern capabilities. Most machines have been too heavy or have lacked a built-in optical drive, or they've had a touchpad (I don't like touchpads), a lousy keyboard or some other fatal deficiency.

Now my search may be over. For this review, I looked at four new notebooks from Fujitsu, Sharp, Toshiba and Compaq. They all place a premium on being small without losing function. The Fujitsu LifeBook P is the smallest of the bunch, with an innovative wide-format screen. The Sharp PC-UM10 is the thinnest laptop I've ever seen. The Compaq Evo N400c combines small size with simplified expansion via an add-on base. And the Toshiba Portégé 4000 doesn't win in any single category, but as an overall package, it may be the perfect set of compromises.

Small Wonder

FUJITSU LIFEBOOK P: This is certainly a leading contender for the machine of my dreams. Fujitsu PC Corp.'s LifeBook P is a small package with a wide-format display, a built-in combination optical drive (DVD/CD-RW) and Windows XP Home Edition. It weighs less than 3.5 lb. and has a price tag of $1,499. Another model in this new series will come with 256MB of RAM and XP Professional.

With an 800-MHz Crusoe processor from Santa Clara, Calif.-based Transmeta Corp. and 128MB memory, this machine is more than capable of meeting my needs. The 9-in.-wide (10.6-in. diagonal) wide-format screen has a 15-to-9 height/width ratio and a 1,280- by-768-pixel resolution, and it's great for working with spreadsheets or graphics. This does make text very small at first, but the solution to that is simple. While using the Microsoft Works word processor, for example, I just set the viewing window to 200%. With this adjustment, and now that Microsoft has built its ClearType font-rendering technology into Windows XP, text on the display is astonishingly sharp and good-looking on this machine — easily the best I've seen outside of a lab.

Fujitsu has had to shrink the usually oversize keys like Shift and Enter, and that makes the keyboard somewhat harder to use. This machine is more than twice as thick as the Sharp PC-UM10, which lets it accommodate a built-in optical drive. And the wide-format screen lets Fujitsu make the whole package more than 2 in. shorter front to back. It's an easy-to-carry package, and the shortened back-to-front dimension will make it more usable on an airplane, whether you're doing actual work or just playing a DVD movie.

Never Too Thin

SHARP PC-UM10: Sharp Systems of America's new PC-UM10 is so thin that when viewed from the side, it nearly disappears. At just 0.65 in. thick, it makes Apple Computer Inc.'s svelte Titanium notebook look fat and overblown by comparison. It's significantly thinner than the Sony Vaio 505 series and even the tantalizing HP Sojourn of a few years back. UM stands for ultramobile, and that's a fair description.

Complete with a 12.1-in. display, full-size keyboard, 128MB of RAM and a 20GB hard drive, it weighs just 2.89 lb. and costs $1,999. At this thinness, the company couldn't fit in an optical drive, so you'll have to use an add-on Universal Serial Bus (USB) or PC Card device for that.

The keyboard looks flat, but when you open up the machine, the nearly full-size keys actually rise so that they can deliver a full 3mm of key travel, which makes for a better typing touch.

The PC-UM10 is a real attention-getter, even with the case closed. Bring it into a meeting, and everyone will want to see it. However, it has one major drawback: Its memory isn't expandable, although a 256MB model, also nonexpandable, is in the works. I prefer two-spindle machines (hard drive and optical drive), so this sleek beauty doesn't quite make the cut for me. But if you don't need a lot of expandability and don't use a CD drive much, this may be just the machine you've been looking for.

The Possibly Perfect Portable

TOSHIBA PORTÉGÉ 4000: I've used Toshiba America Information Systems Inc. laptops off and on for nearly a decade. I've always respected them as well-

built and dependable, but I never really liked any of them. Given a choice of machines to use, I always picked something else. Now, Toshiba has produced what may be the best all-around laptop I've ever seen.

The Portégé 4000 is on the small side, with a 12.1-in. screen, but it's not thin at 1.5 in. That thickness, however, allows for a built-in optical drive, and Toshiba has standardized on that so-useful DVD/CD-RW combination drive, which gives you an onboard backup option. At 4.4 lb., it's not super-light like the Sharp or the Fujitsu, but compared with the Dell Latitude I've been carrying, it's light enough to make a great traveling companion.

And this is one connected machine. WiFi (802.11b) wireless Ethernet networking is standard, with a hardware on-off switch for security. Bluetootb personal-area networking is an optional feature. The machine I tested had both wireless systems, a 750-MHz Pentium III, 256MB of RAM, a 30GB hard drive, an infrared port, a standard RJ45 network port and a built-in V.90 modem — plus two PC Card slots, a VGA output and two USB ports.

The Portégé works well. The keyboard is full size, with a good touch response, and there's a pointer stick for cursor control. In appearance, the Portégé is a handsome machine — as striking as the Sharp, albeit quite different. The front and back of the Portégé are angled, making the overall side view almost a parallelogram — and making it comfortable to carry in your hand.

When you lift the lid, the hinge area for the display is cut away on both ends, leaving significantly more space for the two stereo speakers to work in. The speakers face toward the user, not straight up into the air, and the sound is much better than you'd expect from a machine this size. Toshiba thoughtfully included a hardware volume control, a feature I think should be standard on all computers.

The Portégé's screen is as good as any 12-in. display I've encountered, and it's brighter than most. The video card has 16MB of memory and supports multiple monitors, allowing you to use an external monitor or projector at high resolution.

Battery life is exceptional. Although Toshiba claims up to three hours for the standard battery, I got nearly four.

After using the Portégé, I've come to really like it. I wish it were a pound lighter, but even at its current 4-lb. weight, it's an all-around winner.

Evo-lution at Compaq

COMPAQ EVO N400C: The first of Compaq Computer Corp.'s newly branded Evo series is a replacement for the Armada M300. The Evo N400c comes in at 0.9-in. thick and 3.5 lb. It has a 12.1-in., 1024-by-768-pixel display; a 20GB hard drive; and 128MB of RAM. And it has all the usual features we've come to expect: built-in modem, Ethernet, USB ports. As with its predecessor, there's an extra-cost "mobile expansion unit" (MEU) base that clips onto the N400c's base and holds a floppy and one other drive.

Battery life is average — something more than two hours — until you start adding on extra batteries. The Evo can take a second external battery, plus up to two more in the MEU. That's four batteries simultaneously. The Evo shines in networkability. For a price, you can get the machine with a "humpback" unit that attaches to the lid — Compaq calls it the MultiPort — and offers built-in Bluetooth and 802.11b wireless Ethernet.

In terms of ergonomics, this Evo is an easy notebook to open up. There's a handy pair of hardware up/down volume control buttons on the front, accessible when the lid is closed, and a pointer stick for cursor control. But the screen is a little darker and the keyboard a lot flatter than I prefer.

The Evo N400c is typically Compaq, which to me means it's well-engineered and well-built but not cheap. The base machine is reasonably priced at $2,249, but you have to add $359 for the MEU with floppy and DVD drives, $189 for WiFi and $199 for Bluetooth. That makes an expensive package.

If you're in the market for a portable computer, you've got more choices than ever before, and these are good machines to consider. But if you wait, you'll find that prices have dropped yet again, and newer models may cause you to re-evaluate your selections. This is one industry that doesn't stand still.

Quick Link For reviews of two larger-format laptops from IBM and WinBook as well as a table comparing features and specifications of all six machines, go to www.computerworld.com/q?24037

Reverse-Engineering

DEFINITION

Reverse-engineering is the process of taking a piece of software or hardware, analyzing its functions and information flow and then translating those processes into a human-readable format. The goal is often to duplicate or improve upon the original item's functionality.

BY MATHEW SCHWARTZ

Whether it's rebuilding a car engine or diagramming a sentence, people can learn about many things simply by taking them apart and putting them back together again. That, in a nutshell, is the concept behind reverse-engineering — breaking something down in order to understand it, build a copy or improve it.

A process that was originally applied only to hardware, reverse-engineering is now applied to software, databases and even human DNA. Reverse-engineering is especially important with computer hardware and software. Programs are written in a language, say C++ or Java, that's understandable by other programmers. But to run on a computer, they have to be translated by another program, called a compiler, into the ones and zeros of machine language. Compiled code is incomprehensible to most programmers, but there are ways to convert machine code back to a more human-friendly format, including a software tool called a decompiler.

Reverse-engineering is used for many purposes: as a learning tool; as a way to make new, compatible products that are cheaper than what's currently on the market; for making software interoperate more effectively or to bridge data between different operating systems or databases; and to uncover the undocumented features of commercial products.

A famous example of reverse-engineering involves San Jose-based Phoenix Technologies Ltd., which in the mid-1980s wanted to produce a BIOS for PCs that would be compatible with the IBM PC's proprietary BIOS. (A BIOS is a program stored in firmware that's run when a PC starts up; see Technology QuickStudy, June 25.)

To protect against charges of having simply (and illegally) copied IBM's BIOS, Phoenix reverse-engineered it using what's called a "clean room," or "Chinese wall," approach. First, a team of engineers studied the IBM BIOS — about 8KB of code — and described everything it did as completely as possible without using or referencing any actual code. Then Phoenix brought in a second team of programmers who had no prior knowledge of the IBM BIOS and had never seen its code. Working only from the first team's functional specifications, the second team wrote a new BIOS that operated as specified.

The resulting Phoenix BIOS was different from the IBM code, but for all intents and purposes, it operated identically. Using the clean-room approach, even if some sections of code did happen to be identical, there was no copyright infringement. Phoenix began selling its BIOS to companies that then used it to create the first IBM-compatible PCs.

Other companies, such as Cyrix Corp. and Advanced Micro Devices Inc., have successfully reverse-engineered Intel Corp. microprocessors to make less-expensive Intel-compatible chips.

Few operating systems have been reverse-engineered. With their millions of lines of code — compared with the roughly 32KB of modern BIOSs — reverse-engineering them would be an expensive option.

But applications are ripe for reverse-engineering, since few software developers publish their source code. Technically, an application programming interface (API) should make it easy for programs to work together, but experts say most APIs are so poorly written that third-party software makers have little choice but to reverse-engineer the programs with which they want their software to work, just to ensure compatibility.

Ethical Angles

Reverse-engineering can also expose security flaws and questionable privacy practices. For instance, reverse-engineering of Dallas-based Digital: Convergence Corp.'s CueCat scanning device revealed that each reader has a unique serial number that allows the device's maker to marry scanned codes with user registration data and thus track each user's habits in great detail — a previously unpublicized feature.

Recent legal moves backed by many large software and hardware makers, as well as the entertainment industry, are eroding companies' ability to do reverse-engineering.

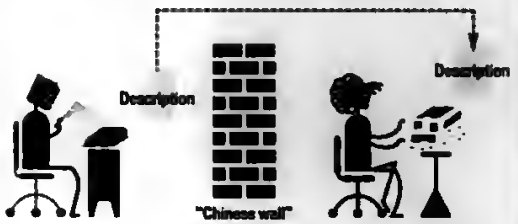
"Reverse-engineering is legal, but there are two main areas in which we're seeing threats to reverse-engineering," says Jennifer Granick, director of the law and technology clinic at Stanford Law School in Palo Alto, Calif. One threat, as yet untested in the courts, comes from shrink-wrap licenses that explicitly prohibit anyone who opens or uses the software from reverse-engineering it, she says.

The other threat is from the Digital Millennium Copyright Act (DMCA), which prohibits the creation or dissemination of tools or information that could be used to break technological safeguards that protect software from being copied. Last July, on the basis of this law, San Jose-based Adobe Systems Inc. asked the FBI to arrest Dmitry Sklyarov, a Russian programmer, when he was in the U.S. for a conference. Sklyarov had worked on software that cracked Adobe's e-book file encryption.

The fact is, even above-board reverse-engineering often requires breaking such safeguards, and the DMCA does allow reverse-engineering for compatibility purposes.

"But you're not allowed to see if the software does what it's supposed to do," says Granick, nor can you look at it for purposes of scientific inquiry. She offers an analogy: "You have a car, but you're not allowed to open the hood."

The Clean-Room Approach To Reverse-Engineering



A One person or group takes a device apart and describes what it does in as much detail as possible at a higher level of abstraction than the specific code.

B That description is then given to another group or person who has absolutely no knowledge of the specific device in question.

C This second party then builds a new device based on the description. The end result is a new device that works identically to the original but was created without any possibility of specifically copying the original.

Schwartz is a freelance writer in Arlington, Mass. Contact him at Mat@PenandCamera.com.

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The Case of the Worm Attack That Wasn't

Suspicious port scans raise alarm, but the apparent attacks turn out to be applications behaving badly

BY VINCE TUESDAY

I WAS HAPPILY DAEAMING about a well-secured network when the beeping of my cell phone woke me. It was the office. I'd been away from work for a few days and was making an effort *not* to read my e-mail or check on the security team. The call gave me an excuse to find out what had been going on.

SECURITY MANAGER'S JOURNAL

The security staffers were calling me to see if they had responded appropriately to an incident. We have a script that regularly analyzes the firewall logs to identify any changes in behavior, which we cross-check with our intrusion-detection system. I normally review the script results myself, but while I was away, the staff took over.

The latest report was full of blocked connection attempts. We expect many probes to come from the Internet, but these were a little worrisome because they came from inside the firewall.

The security staffers were thrilled to think that they had uncovered a new worm. They analyzed the behavior and could see many machines trying to connect to the same handful of external machines; a few internal machines also appeared to be conducting sequential outbound port scans.

This behavior suggested that many machines were infected with a stub virus that was going out to a central location to get updated virus code and download the rest of the worm. Then the virus would scan to find new hosts.

Our protections were working to a certain extent: The firewall was blocking most of the infected machines from downloading further code, and the virus was retrying over and over again. A few copies had apparently managed to get the full package and had begun to search for other machines to infect.

The staffers called me because they had been unable to collect a sample of the infected code to send to the antivirus teams. They hadn't uncovered any applications that shouldn't be on the attacking machines, nor could they determine what was opening so many network connections.

I reminded them of our firm's virus-handling instructions: Had they carried out all the steps for a suspected virus outbreak? We segregate the network to halt the spread internally by splitting off critical servers, delay all file attachments in the e-mail system in case they're being used to spread the virus and notify key contacts in our business units of the attachment delays. They had indeed carried out all of these steps.

We discussed using incident-handling tools to help find the subverted application. I also asked them to track down the systems from which the virus was trying to download the code. If we could shut down those systems, not only would we protect ourselves in the event that the code found a way around our firewall, but we might also help protect other companies. I suggested that the staffers contact our key security product vendors and check *www.incidents.org* to see what other people were saying.

From Bad to Worse

The deeper the security workers dug, the worse the situation looked. They found different applications initiating the connections from each desktop, and the checksums (values used to check file integrity) on the executable files matched those on fresh installs from the original installation CDs. Did this mean the original media was infected, and some kind of time bomb had been initiated? Perhaps the virus was clever enough to patch the kernel so the checksum software returned bogus values? We worried about how dangerous this issue could be. How do you clean up an infection when you can't tell the infected from the clean applications?

No other company was experiencing the same problems. The staffers did have a couple of names, however: AvantGo and RealNetworks.

I paused and asked them to repeat what they had just said.

Now I knew why the application checksums matched. The applications hadn't been tampered with: This was designed behavior. RealPlayer downloads updates and playlists automatically, and AvantGo retrieves new items to be loaded onto handheld computers. These are two examples of the many applications that "phone home" without asking the users, or at least without the users understanding what they are accepting on the default install.

Until recently, we had forced all browsers to use the proxy settings but had allowed some applications to bypass the proxy to download updates. After the Nimda attacks, we changed that and blocked all nonproxy access.

This explained the machines that were trying to connect to outside servers. But the port scanning remained a mystery. I asked the security staffers to repeat the list of anomalies they were seeing. They mentioned that the sequential scans weren't to different ports, as I had assumed. Instead, the number of the source port was rising incrementally, but the destination port was always Port 80.

Again, this is normal behavior for some badly written software. Our firewall returned a warning page explaining that users needed to use the proxy settings. When these applications received this warning page, they knew they had received something, but it wasn't the pages requested, so they kept retrying. The Web server operating system was supplying a new source port with each retry, and the steadily incrementing value in the firewall log had caught the eye of the reviewer as the classic symbol of a port scan.

By the time the situation was resolved, it was late in the evening. The security team had learned a valuable lesson, and it has a strong incentive to not get carried away with an incident the next time.

Do you have a story about false alarms to share? I welcome your comments in the Security Manager's Journal forum. ▶

SECURITYBOOKSHELF

This week, I've had the chance to read the following two recent books: *Incident Response*, by Kenneth R. van Wyk and Richard Forno (O'Reilly & Associates, 2001) and *Incident Response: Investigating Computer Crime*, by Kevin Mandia and Chris Prosise (McGraw-Hill Professional Publishing, 2001).

Both are based on the experiences of commercial incident-response teams: Centreville, Va.-based Para-Protect Services Inc. in the case of the O'Reilly book, and Irvine, Calif.-based Foundstone Inc. for the McGraw-Hill title.

The O'Reilly book reads like a hastily thrown together set of information, most of it seemingly copied from Web pages. The McGraw-Hill book is significantly better. It draws you in by providing detailed examples and screen shots. While the O'Reilly title offers an overview of forensics in a few pages, the McGraw-Hill tome has page after page of reviews and screen shots to help you select the best product. It also covers the overview and operational aspects to get you up and running and help you avoid the worst "gotchas." I heartily recommend the McGraw-Hill title.

LINKS:

www.foundstone.com/rdlabs/proddesc/fport.html: Fport, a handy utility for checking ports opened by applications on Windows NT servers, is available at Foundstone's Web site.

http://freshmeat.net/projects/lsof: This Unix equivalent of Fport is designed to find files opened by a process, but it can also find communications ports that are in use. Download a copy from the Freshmeat.net open-source software Web site.

Quick Link: For more on the Security Manager's Journal, including past journals, visit: www.computerworld.com/q1q2000

■ This week's journal is written by a real security manager, "Vince Tuesday," whose name and employer have been disguised for obvious reasons. Contact him at vince.tuesday@hushmail.com or go to the Security Manager's Journal forum.

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Monitoring Tool Keeps Web Apps on Track

Dirig's software monitors Web application performance and responds to problems

BY AMY HELEN JOHNSON

When your company provides custom networking services for global enterprises, the performance of your infrastructure becomes a mission-critical business factor.

Faced with maintaining high service levels at GiantLoop Network Inc., an optical networking supplier in Waltham, Mass., Bob Catalano built an operational support center that includes application measurement, monitoring and management software from Nashua, N.H.-based Dirig Software Corp. Dirig's RelyENT product gives GiantLoop a way to increase the reliability of its infrastructure, says Catalano, vice president of technology and service management at GiantLoop.

Dirig President and CEO Bob Hoyt says Dirig's products collect data and statistics on system-, application- and component-level computer resources; present a picture of their use, performance levels and overall health; and perform scripted actions in response to problems or events.

Since enterprises need their intranets, extranets, Web applications and networks running well to do business, just pinpointing the online or offline status of different components is no longer good enough, says Hoyt. The performance level is the necessary metric.

RelyENT is Dirig's management product for database, messaging, Web and application servers. XSPress is a management module for application service providers (ASP) that allows an ASP's customers to log in and check performance figures. And the newest product, Fenway, monitors the components for e-business transactions.

Dirig's products can be installed on machines running Windows NT, Windows 2000, Sun Solaris, HP-UX, IBM's AIX, Linux, FreeBSD and BSDi Unix. Agents can monitor systems and applications running the same set of operating systems. The agents query the targeted components for the health statistics that are part of their built-in functions.

What's different about Dirig, says Jeb Bolding, a senior analyst at Enterprise Management Associates Inc. in Boulder, Colo., is that its products are aimed at midtier companies that don't have the time and funds to develop a system based on monitoring frameworks products like Hewlett-Packard Co.'s OpenView or IBM's Tivoli. Although Dirig doesn't provide the breadth of features of those products, it does monitor the critical pieces and has the benefits of quick deployment and easier management, he says.

GiantLoop considered buying Concord Communications Inc.'s eHealth Suite and BMC Software Inc.'s enterprise management suite, says Catalano, but it chose RelyENT because he liked the product's agent technology. The firm also chose RelyENT because GiantLoop could pick out just the modules it wanted instead of buying functions that overlapped those provided by other management software, he says. RelyENT monitors processor usage, memory usage, disk-space usage and applications such as relational databases, Web servers, Web-application servers, network management applications and event notification software.

The Dirig software doesn't use many system resources and is easy to install and configure, says Calalano. He has minor requests for improvement, however. For example, Catalano would like to be able to assign users who don't have administrator status the rights to perform specific tasks.

Another benefit of Dirig's software, says Bolding, is that its interface was designed to make it possible for less technical people to administer the products. But, he warns, Dirig's products don't have the depth of specific application, operating system and hardware modules of some of its competitors' bigger products.

Dirig's future enhancements will include improving reporting modules so data is more presentable and meaningful, integrating its products with the monitoring frameworks products and adding support for trouble notification to be sent to handheld devices. ▶

Johnson is a Computerworld contributing writer in Seattle.

DIRIG EXECUTIVES (from left): Thomas Cloos, Jon Cook and Paul LaFrance.

Dirig Software Inc.

One Indian Head Plaza
6th Floor
Nashua, N.H. 03060
(603) 880-2777

Web: www.dirig.com

Niche: IT infrastructure monitoring and management software tracks the software components used in Web-based applications.

Company officers:
- Robert F. Hoyt, president and CEO
- Paul J. LaFrance, chief technology officer and co-founder
- Thomas T. Cloos, vice president of professional services and co-founder

Milestones:
- Nov. 1997: Company founded
- Aug. 2000: RelyENT released
- April 2001: Fenway released

Employees: 60

Burn money: $5 million from JMI Equity Fund LP, Cabletron Systems Inc. and Longworth Venture Partners

Products/pricing: Fenway, RelyENT, xSPress; $450 to $4,500 per server. Installation ranges from $50,000 for small projects to several million for large ones.

Customers: SilverBack Technologies Inc., GiantLoop, Netvein Inc. and others

Red flags for IT:
- Products don't currently integrate with enterprise management tools.
- Reporting and administration functions may need time to mature.

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Management by Metrics

The market for Web application component monitoring tools is relatively small today, says Corey Ferengul, an analyst at Meta Group Inc. in Stamford, Conn. However, he says he expects it to increase to several hundred million dollars in the next few years as Web operations continue to expand.

Dirig has a year's lead on its competitors in providing Web application monitoring tools, but other vendors are jumping in, says Ferengul.

The mistake that Dirig has to avoid, he says, is sitting still. The company needs to expand into other underserviced monitoring areas, like network storage, Ferengul says.

Fenway's ability to provide details on Web operations is a natural complement to Dirig's core focus on managing network hardware and infrastructure, Ferengul says. With more and more corporations building Web-based operations, performance levels – not just network availability – are key metrics for IT to manage, he says. Dirig's two closest competitors today include the following companies:

BMC Software Inc.

Houston
www.bmc.com

BMC's products cover more areas than Dirig's, including database and network monitoring, says Ferengul. But Dirig's software costs less and is easier to use, he says. Plus, it provides greater flexibility: Dirig customers can do more with the agents it provides, according to Ferengul.

Precise Software Solutions Ltd.

Westwood, Mass.
www.precise.com

Precise's Insight competes most directly with Dirig's Fenway product, says Ferengul. The main difference between the two companies is how they started, he says. Precise began with in-depth Oracle database monitoring, then added Web monitoring. Dirig covers Web servers and operating systems but doesn't provide the wealth of management features for databases that Precise's tools do, he says.

– *Amy Helen Johnson*

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Fig. 1. iSeries Value Proposition.

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Fig. 2. Happy CFO.

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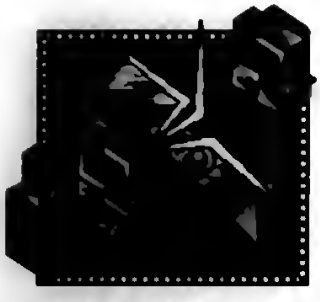

In today's heightened awareness of security, information technology is more important than ever. Conservative estimates place the total market for IT security – authentication, authorization and security administration – at $8 billion within the next three years.

Eagle Alliance, a joint venture of Computer Sciences Corporation and Northrop Grumman, supports the National Security Agency. Bill Duveneck, director of information systems security for **Eagle Alliance**, says the alliance project, known as Groundbreaker, addresses data availability, integrity, authenticity, confidentiality and non-repudiation. "The United States' response to the tragedy of Sept. 11 put a spotlight on the importance of our client's mission and made absolutely clear Groundbreaker's mission," Duveneck explains.

"Hands-on and analytical skills will be needed in areas associated with operational network and system monitoring and problem resolution," Duveneck says. He looks for experience in networks, desktops, enclave protection, operations and knowledge of the various governmental policies that cover information assurance. **Eagle Alliance** has mid- and senior-level positions available, as well as entry level. "We're initiating and building something brand new," Duveneck adds. "What makes us an employer of choice is the important work we're doing."

At **Secure Computing**, Mary Ann Stoffels, vice president of human resources, says demand for products and services that ensure safe, secure extranets for e-business has heightened in the past few weeks. **Secure Computing**, with $39 million in 2000 revenues, offers career options in three development divisions – Advanced Technology, Network Security and Enterprise Security, as well as traditional roles in sales, marketing and operations. "Because of our size, each person has the opportunity to be a leader and be recognized for the contribution you make," Stoffels says.

The company looks for A-level players with industry experience, a track record for delivering results and who have the high-energy profile demanded by the market. "We work hard, but we also invest in ongoing learning. Our company is known for doing the basics and doing them well," she adds.

State Farm Insurance, based in Bloomington, IL, values the ability to anticipate security risks. "We were already on a path of increased awareness prior to Sept. 11," explain Jeff Stempora and Bob Hillmer, directors of enterprise information security and directory services. "We have double-checked our capability, but we've also questioned ourselves on how aware we've made our people and how we have honed our ability to respond."

Stempora and Hillmer look for advanced network security experience when hiring. "There are lots of new questions – new devices and new systems – with new answers yet to be found," says Stempora. "Just as important as the broad technical experience are the soft skills required to increase effective security through communication, collaboration and a tolerance for ambiguity. We must be able to take action, even when we don't have all the answers yet."

Adds Hillmer, **"State Farm** is a great place to work. Our slogan is 'like a good neighbor' – we live that."

For more job opportunities with security firms, turn to the pages of ITcareers.

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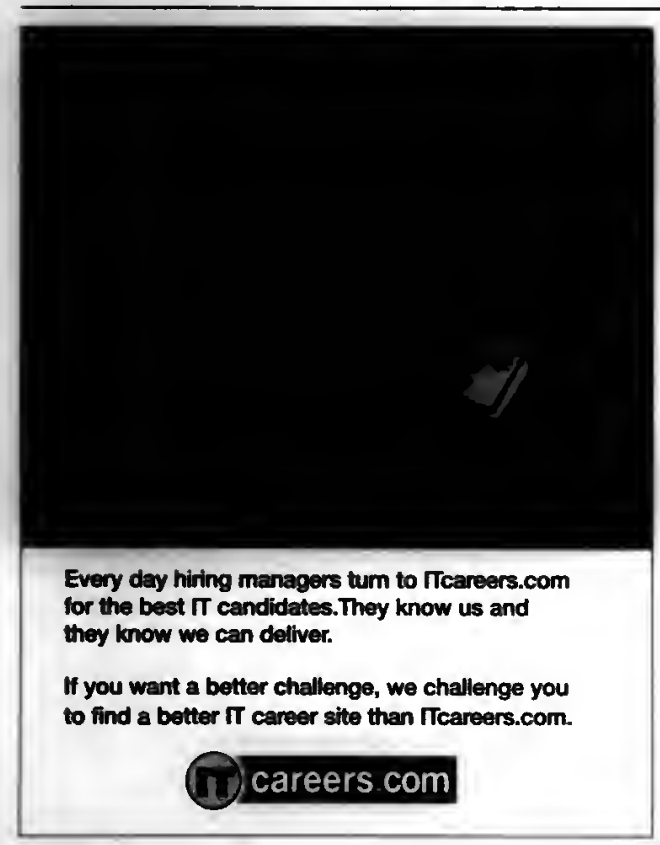
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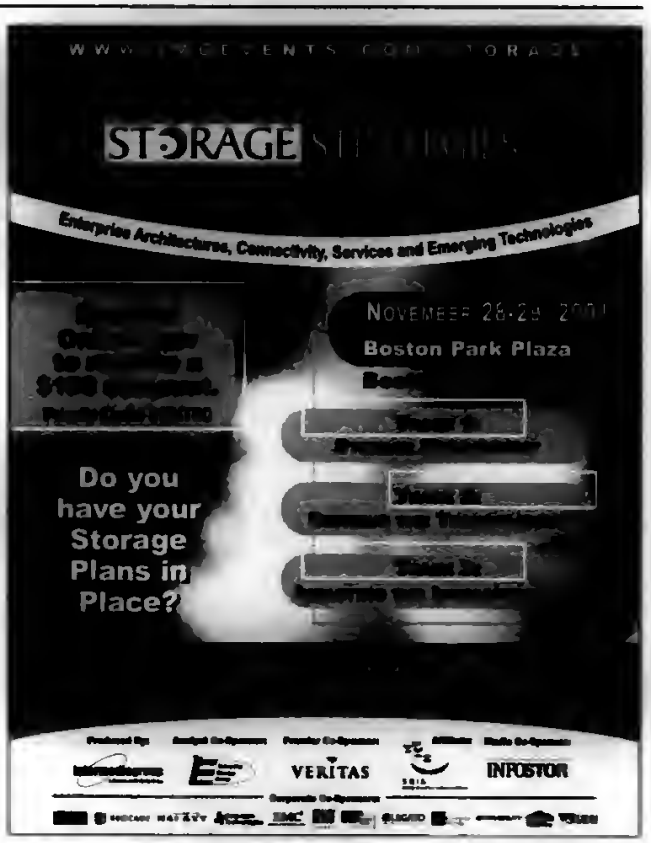

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Provide high-level technical leadership and mentoring for a team of Systems Engineers while working closely with management to define system improvements and deployment strategies. Your technical responsibilities will include enhancement and maintenance of the Message Bus, the Report Ordering Interface, and additional enterprise applications as they are identified. As new initiatives are approved, you will take an active part in the design, development and deployment efforts. You should possess in-depth knowledge of OO analysis and design, Java/VisualAge, Websphere, UNIX/AIX , UDB/DB2, UML/Rational Rose, Servlets, MQ Series, JSP, and EJBs as well as IBM's IAA BOM/XML. Six years' experience is required in full life cycle development including estimating and planning. We prefer 2+ years' experience in web architectures.

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Info Tech Co. seeks a principle consultant to perform/consult w/client regarding customization/implementation of ManageProducts, Authentica RSC/SALL, CompuLaw Vis'n, Interface Intersect'n, Space Imaging's, & Eastman Imaging design, program/manage & technical support for Internet/Intranet websites; web page dvlpmnt; integration of ManageProducts w/AutoCad; custom applicat'n dvlpmnt. Bachelor's or equiv. in Engrg/Computer Science. Min 2 yrs in-job or job-related exp incl'g use of SQL 7.0 RS 4.0, 95, & AutoCad. Travel Required: Employer will pay travel costs. Send resumes to: Smart Solutions, Attn: Dale Mantak, 4888 Galaxy, Warrensville Hts., OH 44128.

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Must have a least a Bachelor's degree or foreign degree equivalent in Computer Science, Engineering or related field. Must also have 1 year experience in job offered OR 1 year experience in a position involving Object Oriented software development. Experience may be obtained concurrently and must include: (i) 1 year experience in designing Graphical User Interfaces, (ii) 1 year experience in developing software in a UNIX environment and (iii) 1 year experience in medical technology software development. Must have legal authority to work in the United States. Send resume to: M. Light (RFE SE) Medtronic SNT, Coal Creek Corporate Center One, 826 Coal Creek Circle Louisville, CO 80027

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Sales Engineer wanted by an IT services provider Co. located in San Jose, CA. Must have BS in any field of enggr or its foreign equivalent and a Masters deg. in marketing with 3 yrs exp in marketing/market development. Mail resume to H.R., ASMAsoft, Inc., 90 N. First St. Ste. 203, San Jose, CA 95113.

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SENIOR SOFTWARE ENGINEER-Wanted by Software Development Company. Requirements include Bachelors Degree or Computer Science or related field or equivalent with 5 yrs of experience. Travel required. Please respond to Robyn Bello, HR Representative, IONA Technologies, 200 West Street, Waltham, MA 02451

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Manager Systems wanted. Must have Bachelor's degree to equivalent or Comp. Sci., Eng. or related field & 3 yrs. systems & database administration experience and networking & programming experience in VisualBasic, C++, Perl & Shell scripting languages. Send resumes to Barbara Catchings, Human Resources, Boston Medical Center One Boston Place, Room D-2, Boston, MA 02118.

Senior Programmer (Latin American Projects) – design, develop, analyze and test custom modifications to law firm acctg software for Latin American implementation: Visual FoxPro, SQL, Crystal Reports, Novell, Windows, OA skills, fluency in Spanish and ability to interact with Latin American clients. Must have BS or Comp Sci/Engg to equiv & 1 yr exp. Respond to: HR Dept, ASA Legal Systems, 475 Sentry Parkway, Blue Bell, PA 19422

Software Engr wanted by an IT services provider Co located in San Jose, CA. Must have BS in CS or any field of enggr or its foreign equivalent with 2yrs exp s/ware devlp life cycle. Mail rtsume to H.R., ASMAsoft, inc 90 N. First St. Ste 203, San Jose CA 95113.

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Windows Programmer Responsible for advanced windows programming in connection with the design of customized software application packages for use in the insurance industry working with the following: Windows C++, VB, OLE, Java, Visual Basic, Access and Financial and Insurance Systems; modifying insurance software products to meet the informational needs of clients, ensuring that back-end software system is capable of developing and processing higher end math calculations to determine insurance risk factors and relating to insurance premium rates to enable insurance agents to coordinate policies for various clients. Must have a Masters degree in Computer Science. Graduate or undergraduate academic program must have included the study of C, C++, Java & Visual Basic. Applicant must take & obtain a passing score of 80% or higher in each of the following employer's standard tests: 1)Visual Basic Test (Basic Knowledge) 2)Visual Basic Test (Controls and Forms) 3) C++ Test, and 4) Financial Test. 40 hrs/wk, Mon-Fri, 9:00 a.m. to 5:00 p.m., $61,000 per year. Applicants must show proof of legal authority to work in the U.S. Job location: Northwest suburbs of Chicago. SEND 2 COPIES OF BOTH RESUME & COVER LETTER to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago Illinois 60605. Attention: Lois Jackson. Reference a V-IL 24371-J. NO CALLS. AN EMPLOYER PAID AD.

Technical Marketing Support Representative

Responsibilities include designing and developing custom software demonstrations tailored to specific customers and industries. Provides technical support to all Sales, Marketing and Business Development functions. Requirements for the position include degrees in Computer Science, Engineering, Manufacturing or a closely related field. Experience preferred in CAD/CAM/PDM. Must be comfortable presenting in front of high-level customer executives and able to travel 30-50%.

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Positions are available for Software Development Engineers II and III with an Atlanta-based technology solutions company. The company architects and designs next generation software for point-of-sale and Internet systems in the retail industry including entertainment, petroleum with convenience or food stores, and restaurants.

Software Development Engineers design next generation systems software for point-of-sale and Internet systems in the retail industry. Responsibilities include designing and conducting modifications of complex systems and subsystems; analyzing, programming, debugging, and modifying systems programs; and performing design changes for product improvements and upgrades.

Candidates should possess a Bachelor's degree in Computer Science or a related field; 2-5 years experience respectively in a point-of-sale retail environment including software documentation, utilities and job control languages, SQL, data modeling, OO design, and Visual Basic.

Apply by mail to: Hilary Love, 3025 Brookside Parkway, Alpharetta, Georgia 30022

BUSINESS SOFTWARE ANALYST

Business Software Analyst to study, review and analyze business processes to determine feasibility of implementation of SAP R3 ERP computer software. Confer with personnel of all functional business units to analyze current operating procedures and prepare business processes for all functions of business operations including financial management accounts payable and receivable, inventory, order entry, payroll, benefits, etc. Conduct fit gap analyses to determine if existing business operations can be mapped into SAP or if customizations to SAP R3 are required to conform existing operations. Design changes to existing business systems to conform to SAP R3 to customize SAP R3 to conform to existing systems. Also responsible for data mapping, data conversion, testing and building and reviewing prototypes. Requirements: Bachelor's Degree or equivalent in Business Admin., Accounting, to related field and two years experience in Accounting, finance or other management or support position, knowledge of SAP R/3 Enterprises Resource Planning Software. Salary: $70,179/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Manager, Washington County Team PA CareerLink, Mitcraft Center Suite 150LL, 90 West Chestnut Street, Washington PA 15301-4517, Job No. WEB208481

SOFTWARE ENGINEER to design, develop, implement, test and maintain n-tier web-based application software in a client server environment using object oriented programming Java, Visual Basic, Developer2000, RDBMS, MS SQL Server, Oracle and Sybase under Windows and UNIX operating systems. Design and develop stored procedures and triggers. Require: B.S. degree in Computer Science, an Engineering discipline or a closely related field with five years of progressively responsible experience in the job offered or in the related occupation of Programmer/Analyst or Programmer. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Send resume to: Alice L. Bagwell, Baywood Technologies, Inc., 9428 Baymeadows Road, Suite 560, Jacksonville, FL 32256, Attn: Job MK.

White Consolidated Industries, Inc., a multi-national manufacturing corporation seeks qualified computer professionals possessing the following skills:

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Works with and users to fulfill business needs by supplying technical/systems solutions through the use of analysis and programming. Makes detailed analyses of projects. Develops technical specifications. Works with database concepts, both distributed and centralized, to produce effective systems, incorporating hardware, software and communications elements. Uses approved system design methods incorporating standards of screen, report and flow layouts. Performs efficient and effective programming, database creation, and unit and system testing activities as defined in design documents. Ensures that program documentation is current and appropriate. Required: is a Bachelor of Science degree in Computer Science or Management Information Systems and six (6) months of experience as a Progress Applications Developer or six (6) months of experience as a Programmer/Analyst. As part of the required experience in the position being offered or in the related occupation the applicant must have had experience in mainstream software development, had experience with Progress, including GUI development running under UNIX or Windows NT, and had experience in analysis, database and program design, programming and unit testing of software packages or internally developed systems. The applicant must also be certified in Progress. Applicants must have proof of legal authority to work permanently in the United States. Please submit resume and cover letter, including job code Pro101, to: IT Recruiter, Human Resources, Virtual Care Provider, 111 West Michigan Street, Milwaukee, Wisconsin 53203.

Command Alkon is the world's largest provider of computerized solutions to the ready mix industry. We are currently seeking a Customer Service Manager to join our corporation. The ideal candidate will have a B.S. in Engineering/ Computer Science or related field and two years experience in Ready Mix industry using computer software applications related to ready mix industry. Send resumes with salary history to: Marci Whitaker, Command Alkon, Inc., 1800 International Park Dr. Suite 400, Birmingham, AL 35243. Resumes without salary history will not be considered.

Computer Network Specialist: Works w/WAN (Wide Area Network) Design & control LAN'S (Local Area Network). Set up & control networks between central office & locations out of country. Design & program software & hardware, includ the data base warehouse over a TCP/IP Protocol. Control security system includ network security access in all wind/NT 4.0 servers & programming & designing security access in all wind/98 workstations. 40 hrs per wk. BA-SP 2 yrs of exp in job offered. Fax resume to (305) 593-2391.

Multiple openings for IT professionals with industry exp. (various skills combination req'd.) in VC++, SQR, HP-Unix, Pro*C, HP-9000, Oracle 7.x, DRS 9000/Unix SVR4.2, etc. Some positions require MS or equiv. CS, Comp. Engg., Bus. Admin. in rel field. Others require BS or equiv as above. Pay matching exp. Foreign educ. equiv. &/or combination of educ/exp. accepted. Travel/relocation reqd. Resume & salary expectations to: Data Dynamics, Inc., 4195 Regency Park Ct., Atlanta, GA 30341.

Positions are available for a Software Engineer in Atlanta, Georgia and a Manager, Systems Engineering in Durham, North Carolina with an Atlanta-based software development company.

The Software Engineer will perform complex product design, systems analysis, and programming using Smalltalk design development, implementation, and maintenance of large Object Oriented/RDBMS based client-server software systems and/or subsystems and complex bug verification, release testing, and beta support for assigned projects.

Candidates for the Software Engineer position should possess a Bachelor's degree in Computer Science or a related field; at least three years experience in systems software development, design, and implementation; and demonstrated knowledge of C++, Smalltalk, and Visual Basic.

The Manager, Systems Engineering will manage the systems engineering department, including coordinating technical expertise with product development to create software deployment packages for use at client sites, managing pre-sale technical calls to clients, facilitating on-site LAN/WAN testing during sales and implementation phases, and coordinating testing of client issues in multiple hardware/operating system environments.

Candidates for the Manager, Systems Engineering should possess a Bachelor's degree in Engineering, Technology or related field and at least five years' experience in computer systems engineering, including at least one year's experience in Oracle, Citrix, Crystal Reports and UNIX.

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Software Engineer - Oracle

Duties: Design, develop, install & administer financial appls. using Oracle Utilities application interfaces to import & export data. Analyze requirements for customization & make recommendations. Requires: B.S. in Comp. Sci. into Syst. Eng. or related field & 3 yrs. exp. in the job offered or 3 yrs. exp. as a Consultant or Analyst/Prog. Will accept any comb. of educ. & exp. equiv. to a B.S. degree. Concurrent exp. must incl. 3 yrs. exp. designing & developing financial appls. & 3 yrs. exp. using Oracle EOE. 40 hrs./wk., 8:00 a.m. to 5:00 p.m. Send resume (no calls) to: Jacquie Schwan, CTG, Inc., 30 N. Union St., Suite 201, Rochester, NY 14607-1345.

SENIOR SYSTEMS ADMINISTRATOR to administer, install, configure, maintain and troubleshoot UNIX servers under SUN Solaris and AIX operating systems in a client/server environment using Clearcase, Veritas Volume Manager, Solstice DiskSuite, Patrol, Tivoli, DNS, NIS, NFS, and TCP/IP. Provide cross-platform support in Windows NT and mainframe networks. Supervise and mentor junior Systems Analyst and Systems Administrator. Require: B.S. degree in Computer Science/Engineering, or a closely related field with five years of progressively responsible experience in the job offered or as a Systems Analyst. Competitive salary offered. Send resume to: Debra L. Crow, Citibank Universal Card Services, 8787 Baypine Road, Jacksonville, FL 32256, Attn: Job SP.

Software Engineer Design. Develop & debug software including wireless network protocols. Document implementation protocols. Req: Master's Degree in Computer Science, Computer Eng., Electrical Eng., specialized in Computer Network, 40-hr wk. Job/Interview Site: Long Beach, CA. Send resume to Avalant, PO Box 30282, Long Beach, CA 90853.

Sr. Systems Analyst/Programmers-Sensormatic Electronics Corporation, Boca Raton, Florida, has multiple openings for Sr. Systems Analyst/Programmers to work with and support BaaN ERP software and sub-systems. Candidates must present a Bachelors degree in Computer Science, Information Science, Information Systems or Computer Engineering (software emphasis) or related field and 2-3 years experience using BaaN IV. Please apply directly through www.sensormatic.com (employment) by location and reference Job Code AZA1 to send resume and salary requirements to Staffing Department, B-76 of Sensormatic, PO Box 5037, Boca Raton, Florida 33431-0837. We are proud to be an EEO/AA employer M/F/V/D.

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ADVERTISERS INDEX

American Power Conversion www.apcc.com 888-289-APCC	57
AT&T www.att.com	79
ASPECT www.aspect.com	13
Cisco www.cisco.com	30
Computer Associates www.ca.com	4
DataCore Software www.datacore.com	47
Dell www.dell.com	27, 35*
DLTtape Technology www.superdlttape.com	39
DLTtape Technology www.dlttape.com/qualified	41
Executive Software www.execsoft.com	17
Hewlett-Packard www.hp.com	42-43
IBM AS/400 www.ibm.com	67
IBM E-Infrastructure www.ibm.com	55
IBM Storage www.ibm.com	11
Microsoft Commerce www.microsoft.com	36-37
Microsoft MSDN www.microsoft.com	2-3
Oracle Corp. www.oracle.com	9
Rational Software www.rational.com	15
RSA Security www.rsasecurity.com	65
StorageTek www.StorageTek.com	52
Sun Microsystems www.sun.com	21-24, 80
Sybase www.sybase.com	18-19
Windows ADVANTAGE.com www.windowsadvantage.com	63

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COMPANIES IN THIS ISSUE

Page number refers to page on which story begins. Company names can also be searched at **www.computerworld.com**

A.G. EDWARDS & SONS INC 66
ABERDEEN GROUP INC 20,28
ACTA TECHNOLOGY INC 8
ADOBE SYSTEMS INC 66
ADVANCED MICRO DEVICES INC 66
AETNA INC 8
AFLAC INC 25
AIRCAST INC 1
AMERICA ONLINE INC 1,20
AMERICAN AIRLINES VACATIONS 1
AMERICAN BAR ASSOCIATION 1
AMERICAN EXPRESS CO 8
AMERICAN LIBRARY ASSOCIATION 1
AMR RESEARCH INC 10,66
ANN TAYLOR STORES CORP 1
AOL TIME WARNER INC 32,34
APPLE COMPUTER INC 66
ARGUS RESEARCH CORP 20
ASERA INC 66
AT&T CORP 29,30,66
AT&T WIRELESS SERVICES INC 8
AVANTGO INC 64
AVIS GROUP HOLDINGS INC 1
BAE SYSTEMS 10
BARCLAYS CAPITAL 44
BAY V SUPERMARKETS INC 66
BLUE SHIELD OF CALIFORNIA 1
BMC SOFTWARE INC 20,66
BORLAND SOFTWARE CORP 66
BOWMAN CAPITAL 66
BOYLE, FREDRICKSON, NEWHOLM, STEIN & GRATZ SC 1
BRISTOL-MYERS SQUIBB CO 66
CABLETRON SYSTEMS INC 66
CALLIDUS SOFTWARE INC 48
CAP GEMINI ERNST & YOUNG 66
CAPITAL ONE FINANCIAL CORP 66
CARDINAL HEALTH INC 33
CARNIVAL CORP 1
CATERPILLAR INC 1
CAUCUS: THE ASSOCIATION OF HIGH TECH ACQUISITION PROFESSIONALS 31
CENDANT CORP 1
CENTER FOR DEMOCRACY AND TECHNOLOGY 10
CENTERS FOR DISEASE CONTROL AND PREVENTION 20
CERBERUS CAPITAL MANAGEMENT LP 66
CERT COORDINATION CENTER 66
CHARLES SCHWAB & CO 10
CISCO SYSTEMS INC 20
CLEAN HARBORS INC 8
CMORE MEDICAL SOLUTIONS INC 53
COMMONWEALTH FINANCIAL NETWORK 66
COMPAQ COMPUTER CORP 8,20,58,60
COMPUTER ASSOCIATES INTERNATIONAL INC 66
CONCORD COMMUNICATIONS INC 66
COREL CORP 66
CYOTA 66
CYRIX CORP 53
D.H. BROWN ASSOCIATES INC 59
DAIMLERCHRYSLER SERVICES AG 53
DIGITAL CONVERGENCE CORP 60
DIGITAS INC 53
DIMI SOFTWARE INC 66
EASTERN BANK CORP 64
ELANCE INC 66
ELECTRONIC DATA SYSTEMS CORP 10
EMA 20,25
ENTERPRISE MANAGEMENT ASSOCIATES INC 66
ENVOYWORLDWIDE INC 60
FALCON PLASTICS INC 7
FBI 52
FEDERAL AVIATION ADMINISTRATION 77
FEDERAL COMMUNICATIONS COMMISSION 10
FEDERAL RESERVE BANK 44
FEDEX CORP 14,32,33,34
FERRIS RESEARCH INC 16
FIRST ORG INC 64
FMC CORP 17
FORRESTER RESEARCH INC 1,40,77
FOUNDSTONE INC 64
FOX PITT KELTON INC 8
FRED MEYER INC 44
FROST & SULLIVAN INC 10
FUJITSU PC CORP 60
GALILEO INTERNATIONAL INC 1
GARTNER INC 66
GATEWAY INC 60
GENUITY INC 16
GIANTLOOP NETWORK INC 66
GIGA INFORMATION GROUP INC 10,66
HARVARD BUSINESS SCHOOL 63
HEALTHCONNEX 59
HEWITT ASSOCIATES LLC 20,25
HEWLETT-PACKARD CO 1,28,58,60,66
HISPANIX INC 7
IBM 16,28,29,60,62,66
IDC 20,28,54
IEEE 14
ILLUMINATA INC 26
IMMIGRATION AND NATURALIZATION SERVICE 10,13
INCENTIVE SYSTEMS INC 48
INFORMATION TECHNOLOGY ASSOCIATION OF AMERICA 8,12,32
INTEL CORP 14,58,60
INTERNATIONAL COMPUTER NEGOTIATIONS INC 31
JAMCRACKER INC 32,33
JDS CO 8
JMI EQUITY FUND LP 66
KANSAS CITY POWER & LIGHT CO 40
KEY3MEDIA GROUP INC 1
KPMG CONSULTING INC 6,7
KVS INC 66
LANDSTAR SYSTEM INC 1
LA Z BOY INC 66
LENDER GROUP 44,45
LOCKHEED MARTIN CORP 10
LOGISTICS.COM INC 40
LONGWORTH VENTURE PARTNERS 66
LOTUS SOFTWARE GROUP 20,56
LUCENT TECHNOLOGIES INC 20
MAJESTIC SYSTEMS INTEGRATION CO 60
MARRIOTT INTERNATIONAL INC 1,32,33
MASTERCARD INTERNATIONAL INC 8
MCDONALD'S CORP 1,34
MEMORIAL SLOAN-KETTERING CANCER CENTER 8
MEYDEN RESEARCH INC 60
META GROUP INC 66
MICROSOFT CORP 1,7,12,29,44,53,54,56,58,60,78
MOBILE PAYMENTS FORUM 8
MONITOR GROUP 40
NASDAQ STOCK MARKET INC 28,33
NATIONAL CONFERENCE OF COMMISSIONERS ON UNIFORM STATE LAWS 1
NATIONAL SERVICE INDUSTRIES INC 66
NETSOL INTERNATIONAL INC 53
NETVEIN INC 66
NORTHROP GRUMMAN CORP 10
NOVELL INC 54,66
OCEAN GROUP 44
OFFICE DEPOT INC 10
ONYX SOFTWARE CORP 8
ORACLE CORP 6,66,80,54
ORBITZ LLC 1
PACKARD HUMANITIES INSTITUTE 66
PAKISTAN SOFTWARE HOUSES ASSOCIATION 10
PANASONIC CO 66
PANASONIC MANAGEMENT INFORMATION TECHNOLOGY SERVICES CO 34
PARAMETRIC TECHNOLOGY CORP 10
PARA-PROTECT SERVICES INC 64
PCS INC 48
PEOPLESOFT INC 8,56
PHOCUSWRIGHT INC 1
PHOENIX TECHNOLOGIES LTD 60
PRECISE SOFTWARE SOLUTIONS LTD 66
PRICEWATERHOUSECOOPERS 44
PRINCIPAL FINANCIAL GROUP 1
PROXIM INC 10
QUALCOMM INC 8
RADISSON HOTELS & RESORTS 1
REALNETWORKS INC 64
RED OAK SOFTWARE INC 33
REEFEDGE INC 44
RELIANCE STEEL & ALUMINUM CO 7
ROBERT HALF INTERNATIONAL INC 44,66
ROBERT W. BAIRD & CO 10
ROCKFORD CORP 64
SABRE INC 1
SANS INSTITUTE 10
SAP AG 66
SCHWAB TECHNOLOGY 10
SCRIBE SOFTWARE CORP 8
SHARP SYSTEMS OF AMERICA 60
SILVERBACK TECHNOLOGIES INC 66
SOFTWARE ARCHITECTS INC 32,33
SOLUTIONS4NETWORKS 20
SONY CORP 60
SSA GLOBAL TECHNOLOGIES LTD 66
STANFORD LAW SCHOOL 66
STAPLES INC 10
STONEWATER SOFTWARE INC 40
STRUCTURAL DYNAMICS RESEARCH CORP 10
SUMMIT STRATEGIES INC 7,26
SUN MICROSYSTEMS INC 66
TECHIES.COM INC 20
THE ANDERSONS INC 64
THE BOEING CO 10,20,25
THE CHARLES SCHWAB CORP 66
THE DAVID AND LUCILLE PACKARD FOUNDATION 20
THE GOLDMAN SACHS GROUP INC 10
THE OPEN GROUP 20,25
THE PMI GROUP INC 66
THE RADICATI GROUP INC 20
THE RESEARCH BOARD INC 20
THE TALBOTS INC 1
THE YANKEE COS 66
THOMAS WEISEL PARTNERS LLC 20
THOUGHTWORKS INC 32,34
TOSHIBA AMERICA INFORMATION SYSTEMS INC 60
TRANSMETA CORP 60
TRILOGY SOFTWARE INC 48
TRW INC 1
U.S. DEPARTMENT OF JUSTICE 7,28,66
U.S. DEPARTMENT OF TRANSPORTATION 8
U.S. ENVIRONMENTAL PROTECTION AGENCY 8
U.S. POSTAL SERVICE 44
UNILEVER PLC 8
UNISYS CORP 66
UNITED AIR LINES INC 66
UNITED PARCEL SERVICE INC 14
UNIVERSITY OF CAMBRIDGE 8
UNIVERSITY OF MIAMI 10
VALASIS COMMUNICATIONS INC 7
VERSANT CORP 33
VIADOR INC 66
VISA INTERNATIONAL INC. 8
VMWARE INC 20
WELCH ALLYN INC 48
WELLPOINT HEALTH NETWORK INC 4
WIRELESS ETHERNET COMPATIBILITY ALLIANCE 14
WORLD WIDE WEB CONSORTIUM 44
WORLDCOM INC 8,66
YAHOO INC 8

Continued from page 1

UCITA

Vendor proponents: Don't really want changes; UCITA gives them what they want. But they're willing to drop the so-called self-help provision, which allows a vendor to remotely disable a system.

End-user opponents: Want UCITA scrapped. But they'll nonetheless offer up 80 pages of proposed amendments.

Outlook: The UCITA drafting committee has so far resisted change. But opponents succeeded in stopping the law where it was introduced this year. They're gaining clout.

"Some things will be revised or tweaked. UCITA ties the customer's hands and adds extra boops that you must go through to negotiate around the law," said Gratz. "If you doo't recite the mantra exactly, then you may run into problems that cause a breach of contract."

The NCCUSL drafting committee will meet next weekend. The meeting was spurred by the American Bar Association, which recently considered asking for major revisions to UCITA but held off, pending this meeting. Opponents are seeking broad changes addressing click-wrap licensing, limits to damages and electronic self-help in the Uniform Computer Information Transaction Act, as the law is formally known.

UCITA's opponeots are hopeful that the most contentious part of the proposal, electronic self-help, will be dropped. That provision allows vendors to electronically disable software for a breach-of-contract violation. But users say it's a ticking time bomb that will increase litigation and create undue risk.

"This type of automatic restraint introduces a new level of risk to the business," said Roland Salvato, manager of contract and vendor relationships at Blue Shield of California. "If a vendor has the power to automatically disable the software code, then that gives them an unfair power over us."

UCITA's proponents, which include Microsoft Corp., America Online Inc. and trade groups that represent software companies, have asked the UCITA drafting committee to remove the self-help provision in an amendment proposal.

But opponents say that doesn't go far enough. They want UCITA to prohibit any kind of disabling capability, just in case vendors try to apply self-help under existing commercial law. As long as vendors believe self-help is possible, they will build back doors that give them access to software and put systems at risk, said Gordon Pence, intellectual property counsel at Caterpillar Inc. in Peoria, Ill. "It's a security risk. Even if used properly, it's still a security risk."

Another issue for opponents is click-wrap licensing, in which users "click" to accept licensing terms that could inadverteotly cause a contract breach, said Kevin Hudson, executive director of the Caucus Association of High Tech Procurement in Winter Park, Fla.

UCITA's opponents, which have formed a broad coalition representing manufacturing, financial services and library groups, believe they have built enough clout to seek changes. The opcoming meeting follows the blocking or stalling of UCITA in at least eight states this year, including Texas, a key technology state. "I would bope that sends a message to the people who are trying to get it passed," said Miriam Nisbet, legislative counsel for the American Library Association in Chicago.

Still, it remains to been seen whether a compromise is possible. Opponents have submitted 80 pages of amendments, almost as long as the law itself, and many believe UCITA cao't he fixed. If UCITA fails to wio adoption, pressure will grow on Congress to set a uniform law, a process no side may like, said Carlyle "Connie" Ring Jr., chairman of the NCCUSL's drafting committee. "Ours is an open process where we at least try to maintain rational dialogue," said Ring. He added that he hopes the meeting can "enlarge the base of support" for the law.

Continued from page 1

Travel

he would analyze IT projects for his family's multibrand hotel chains on a case-by-case basis.

Robert Dickinson, president of Carnival Corp. in Miami, said he cut some "bells and whistles" projects, like implementing a second-generatioo imaging system, but he will consider new IT projects that save money. "Basically, we said, 'If you can't find a way to justify it this year, and we've always dooe without it, we can probably get along without it. If you didn't need it in 2001, you won't need it in 2002'" unless it saves money, he said.

According to Henry Harteveldt, an analyst at Forrester Research Inc. in Cambridge, Mass., travel companies are looking to channel customers directly into their reservation systems via the Internet. That saves the airlines money on fees paid to global distribution system (GDS) companies like Sabre Inc. in Fort Worth, Texas. All travel suppliers will try to reduce costs by "direct connect" — having customers buy travel online directly from the supplier. That sort of automation cuts down on GDS fees and costly call center staffing.

Orbitz LLC CEO Jeffrey Katz told an audience at the conference that he sooo will have a direct connect from his travel site to an airline.

"Direct connect becomes more critical for them now," Harteveldt said. "Dollars saved from GDS booking fees trickle down to the bottom line. More than 25% of the savings will go down to the bottom line."

Dickinsoo said he's planning to create his own distributioo system. "If the distribution systems over the past 30 years have beeo primarily shaped by the airline system, and they haven't been too coocerned with our business, then we have to cover both sides of the fence," he said.

One attendee who isn't necessarily scaling back on new IT projects is Gino Giovanelli, director of interactive marketing at Radisson Hotels & Resorts in Minneapolis. "We are still going ahead with IT projects," Giovanelli said. "They have to pass a certain litmus test, [but] it's the same litmus test [as before]." He said his proposed budget has been trimmed, but it's not smaller than last year's.

One project Giovanelli is considering would streamline the reservation profile so users fill out fewer fields. "Thirty-five percent of the people who go to our site leave at the profile stage," he said. That is, after they have already picked dates and room types. "This number should not be zero, but I think it should be less than 35%."

All the attendees said they would push e-mail marketing as a cheap and effective way of increasing bookings; however, some are targeting customers based on customer relationship management information. Instead of offering deals to exotic locales, the hotels can offer quick-trip getaways near bome by offering cbeap hotel rates to all known custnmers in certain ZIP codes.

Giovanelli said he may not do that right away, but he does market destinations that are popular in certain areas by customizing the Web site. For example, if Florida is a commoo destination for people in the Northeast, he will send deals to customers with ZIP codes in the Northeast, and he might offer Scottsdale, Ariz., for customers in Minnesota.

The Catch-22 in Airline Security

Airlines are particularly sensitive to cutting IT costs right now because they don't know what they will be required to implement for back-end security screening or if the government will fund any of the costs.

"There's this catch-22. The airlines are waiting for the FAA to see what they have to do, while the FAA is waiting for the airlines to tell them what they can do. If government takes over the funding of security, then that returns some funding to the bottom line," said Henry Harteveldt, an analyst at Forrester Research. Until then, "substantial portions of IT budgets may be put on hold."

Airlines are also less likely to invest in security screening technology because it may not work as promised, and a cheaper version could be available in six months.

"These are already IT budgets that have been decimated," he said. "There's going to be a huge amount of beta testing. . . . You can't play with security. The risk of failure is too great right now."

– *Jennifer DiSabatino*

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BPA ABM

FRANK HAYES/FRANKLY SPEAKING

Redmond's Real Woe

THE TROUBLE WITH TALKING about the Microsoft antitrust settlement is that everything keeps changing. No sooner were industry pundits screaming about how the Justice Department's settlement deal is a politically motivated sellout than the focus shifted to speculation about what would happen if the states didn't sign on. And then how many states wouldn't sign on. And then whether Microsoft would pull out of the deal. And then whether the judge would delay remedy proceedings while the public comments on the proposed settlement.

And that was just in the first five days.

Of course, for most corporate IT people, this is a sideshow. While Judge Colleen Kollar-Kotelly collects comments on the proposed settlement and holds remedy hearings for the states that rejected it, we're a lot more concerned about how we can keep from losing our staffs as our budgets get slashed.

Besides, a lot of IT people are asking, will anything the court does really force Microsoft to change?

It's a little late for that. Change isn't coming. It's already here.

For Microsoft, change started arriving in early 2000, when its stock price stopped doubling every year and started to drift.

More change came in the months that followed, as the dot-com economy went from go-go to gone-gone, and the huge pile of cash Microsoft had quietly invested in other companies turned into, well, a *small* pile of cash.

Then still more change, as more and more big corporate customers decided they were finally satisfied with their Microsoft products — and stopped upgrading.

And yet more change as increasing numbers of consumers, worried about the cooling economy, decided they didn't need new PCs either — and stopped buying.

Along the way, wireless handheld devices (you know, cell phones with screens) became the Next Big Thing — and Microsoft wasn't a player. The Internet turned out to be a great place for shopping but not so popular for buying — while Microsoft had bet heavily on .Net and Passport. And when Microsoft tried to strong-arm its customers into upgrading in lockstep, customers didn't just resist, they slapped back hard — and Microsoft had to back down.

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And, oh yeah, Microsoft's appeal to the Supreme Court was denied, and the ruling that Microsoft is a lawbreaking monopolist was pretty much set in stone.

That last one is what the court is worried about now. What Microsoft should be worried about is all the rest.

Microsoft's financial and compensation model depends on a stock price that keeps climbing. Its product sales model depends on customers who keep upgrading. Its planning model depends on being able to control the game and limit change.

In other words, right now, Microsoft's whole business model is broken. Being declared a monopoly and having to face the music is just adding insult to injury.

Microsoft doesn't really need to illegally leverage its Windows monopoly. What Microsoft really needs are some new ideas. PC operating systems are no longer a growth market. Neither are office applications or Web servers — and e-commerce infrastructure isn't looking like the next rocket to the moon, either.

The IT world has changed. Microsoft needs new products to survive that change. If it finds them, the company will have a new direction — a new way to grow. If it doesn't, Microsoft will soon be clawing at corporate IT customers for every loose nickel, desperately searching for any way to stay alive — consent agreement or no consent agreement.

So when Microsoft rolls out its Xbox game machine on Thursday, watch very closely. Sure, it's another sideshow — but for IT shops, it could be a sideshow that matters. And for Microsoft, it could be the future. ◗

SHARK TANK

TECHNICAL ARCHITECT pilot fish embeds a graph – "in color, to make it readable" – in his design document, then e-mails it out for review. Reviewer on the document quality and standards team prints it on a monochrome printer, writes one comment on the output and sends it back to the fish. The comment: "This graph needs to be in color."

LEST ANYONE FORGET IT guys set up a PC as a controller to manage every server in a law firm's computer room. And the password is known only to those few who have a need to know, reports a pilot fish on the inside. "However, the chosen password is also the software vendor's name," he says, "which constantly streams across the bottom of the screen."

THIS USER'S PC has required seven rebuilds or replacements over a year and a half, so IT manager pilot fish starts looking for the cause. Fish and a tech pore over every aspect of the user's machine, even the electrical connection – but it's all clean. He's ready to give up when a co-worker mentions that the user is a believer in magnetic therapy. "Turns out he was wearing magnets," fish grumbles, "around his ankles, waist and wrists!"

OUT-OF-THE-OFFICE road warrior is shouting at support pilot fish over the phone – she *can't* dial in to get her mail and he *must* fix the problem *right now*! "After spending several minutes calming her down, I finally get her to read the error message word-for-word off the screen," fish says. "She practically screams at me, 'It says *No dial tone!*' "

TO SIMPLIFY remote backups, support team asks users to move all their important files into the My Documents folder on their PCs. Almost immediately, pilot fish gets a call from one user whose machine has died – just after she moved the Windows folder into My Documents. Her explanation: "I remembered someone telling me that the Windows folder was a very important one."

Be important to me. **sharky@computerworld.com.** I'll send you a snazzy Shark shirt if your true tale of IT life sees print – or if it shows up in the daily feed at *computerworld.com/sharky.*

The 5th Wave

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RETURN ON COMMUNICATIONS

Fact: The sales department has different needs than HR. Or manufacturing. Or customer service. And they all need to be on your network. But it's not enough to build a network just to run everyone's apps. You need one that'll do so without causing you massive headaches. And that will return your investment. Short and long term.

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If you ask IBM, e-business is complicated and hard. So don't ask them.

With fourteen operating systems, multiple chip architectures and a tangle of middleware to deal with, it's no wonder only IBM can "integrate" their systems. And with their closed, complex systems, they control it all. Which means you'll pay – and pay – for their monopoly on service.

On the other hand, Sun takes out complexity. Sun systems run on one chip architecture and a single operating environment, so you can scale from under-$1,000 desktop systems to over-$10-million data center systems without breaking a sweat, something you won't find at IBM. So if you want to lower your TCO (and who doesn't?), Sun lets you run the same applications, the same middleware (directory, portal, app server, etc.) and the same administrative framework across your entire IT environment. Which means you can use a single set of tools to develop all your applications. So there's no recoding, no retraining and no expensive consultants to come in and "manage" it all for you. You can even share the same system components between your midrange and data center-class systems. That's how you reduce complexity and bring down the cost of running your business. Big time.

IBM has it all wrong: e-business doesn't have to be complicated or hard. You just need the technology and partners that all speak the same language: yours.

take it to the nth

Sun microsystems

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